

EXPEDITION SOUTH

Ellery Anderson applied to join an expedition to the Falkland Islands Dependencies within the Antarctic as a means of satisfying a life-long personal ambition and of re-orientating himself after 14 years as a regular Army officer—the last three of which had been spent as a leader of guerrilla forces operating in North Korea—in which campaign he was awarded a bar to his Military Cross, having first won this decoration in North Africa. He sailed for Hope Bay in October, 1954, as leader of a small twelve-man base whose objectives were the exploration and survey of one of the least-known sectors of the Antarctic.

But topographical survey was only one of the many branches of work to be done. Dr. Paul Massey carried out research into the effects of intense cold on the human mind and body, while R. J. F. Taylor, among many other tasks, worked on the output of energy from huskies on prolonged journeys. Thousands of meteorological observations were made at base and in the field.

In this book the author has given a picture of the life lived by himself and his companions as a small community in a vast wilderness. It is a book of extraordinary interest about ordinary people from all walks of life fighting and winning a battle against a ruthless enemy, the Antarctic, with its danger, its boredom, its physical and mental strain and its overwhelming majesty. There is a thrilling sense of challenge and achievement as well as humanity and humour—it is everyman's guide to the Last Continent.



The Author

EXPEDITION SOUTH

by

W. Ellery Anderson, M.B.E., M.C.

THE TRAVEL BOOK CLUB
121 CHARING CROSS ROAD
LONDON W.C.2

THIS EDITION BY ARRANGEMENT WITH
EVANS BROTHERS LTD., LONDON

PRINTED IN GREAT BRITAIN BY
HAZELL WATSON AND VINEY LTD
AYLESBURY AND SLOUGH

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All the illustrations were taken by members of Base D and many of them by the author himself. The publishers are grateful to D. A. Clarke, R. R. Kenney, N. A. G. Leppard, A. F. Lewis, P. M. O. Massey, M. F. Tait and D. R. Willis for permission to reproduce photographs from their personal collections.

Author's Foreword

THIS is the International Geophysical Year, and a new era of exploration is beginning. No longer do men look to distant horizons with curiosity and hope, but gaze upward to the skies above them, to space and to the stars. Space cannot be conquered without knowledge, and in the upper air above the Antarctic lies, perhaps, some small but vital part of that knowledge.

So it is that while the rockets and satellites are being launched in the first faltering steps into space, men like Sir Edmund Hillary and Dr. Vivian Fuchs will be struggling with their sledges through the snow and blizzards of Antarctica on the last long journey of exploration in the world.

In this book I have tried to show the typical life of men who live and work in the Antarctic. They are not heroes, but ordinary people from all walks of life working as a team in strange and difficult conditions. Why did they choose to cut themselves off from all that is pleasant in life and be content to dwell in a barren wilderness of snow and ice? I think the answer is in each man himself, but underneath the many different personal reasons lies the challenge and the sense of achievement.

Just as we worked as a team at Hope Bay, it has been teamwork that has enabled me to complete this book, and I am deeply grateful to all members of Base D who have helped me in one way or another, either by the use of their photographs or by their constructive criticism and advice; it is not my story alone, but the story of the Base as a whole. In particular, my thanks are due to Norman Leppard for the maps he drew for me.

I am also grateful to the B.B.C. for use of material I recorded on their midget recorder for the radio programme, "Expedition South". With this recorder I was not only able to play back Dick Kenney's nocturnal teeth-grinding, but to keep a

record of my "on the spot" impressions which I have incorporated in this book.

Finally, I should like to express my thanks to Sir Raymond Priestley and Miss Anne Todd of the F.I.D. Scientific Bureau for checking the manuscript and for giving me so much encouragement, help and sound advice.

*Members of the Falkland Islands Dependencies
Survey Expedition, Hope Bay, 1954—6*

W. ELLERY ANDERSON, Base Leader and Meteorological
Observer

P. M. O. MASSEY, Deputy Leader and Medical Officer

D. A. CLARKE, Diesel Mechanic

R. R. KENNEY, Assistant Surveyor

N. A. G. LEPPARD, Assistant Surveyor

A. F. LEWIS, Meteorological Assistant

P. W. MANDER, Meteorological Assistant

A. PRECIOUS, Meteorological Assistant

M. F. TAIT, Meteorological Assistant

R. J. F. TAYLOR, Dog Physiologist

D. R. WILLIS, Wireless Operator

R. F. WORSWICK, Meteorological Assistant

Chapter One

I HELD the Bible in my right hand and took the oath: "I, William Ellery Anderson, do swear that I will well and truly serve our Sovereign Lady Queen Elizabeth II in the office of magistrate and justice of the peace, and I will do right to all manner of people after the laws and usages enforced in this Colony without fear, favour, affection or ill will. So help me God."

I put down the Bible, and the Governor of the Falkland Islands, His Excellency Mr. Oswald Raynor Arthur, rose from his desk to congratulate me. We shook hands. "I trust that you will have a good season in Hope Bay," he said.

Involuntarily I turned and glanced at a large map of the British Antarctic Sector on the wall; at Graham Land, the long, jagged peninsula jutting northwards from the continental land mass centred on the South Pole.

At the tip of Graham Land I saw Hope Bay, the place where I had just sworn to do right to all manner of people.

Hope Bay was at that time the largest of the British Antarctic bases, from where the major sledging journeys of survey and exploration were launched. I had just been appointed the new base leader and was on my way to take over.

Mr. Arthur was in his fifties, very tall, distinguished, with thick grey hair, bushy eyebrows and a ruddy complexion. He wore a check tweed hacking jacket and grey flannel trousers, and, sitting there with a couple of rather smelly spaniels sprawled beside his chair, he seemed more like an English country squire than my conception of a Colonial Governor.

We were in his office in Government House, Port Stanley. The desk, a solid Victorian piece, was at one end of the room, while at the other end a stuffed Emperor penguin peered down smugly at an egg nestling between its feet. I had been told about

this penguin. I had heard that occasionally in moments of frustration and stress the Governor had been known to take a kick at it.

The stuffed bird represented his major political problem, which was not the small, loyal community he governed, but the British Antarctic Sector that he administered. Known as the Falkland Islands Dependencies, the Sector includes everything south of South America and the Falklands, between two lines of longitude 20° West and 80° West converging on the Pole.

Graham Land, the part we occupy, is about the size of England and Scotland together, a drab, white wilderness with peaks of snow-free rock projecting out of the primordial ice-cap that covers the land. The interior, a deeply crevassed plateau, is generally inaccessible and unexplored, being guarded on either side by rock and ice-cliffs rising hundreds of feet from the frozen sea or ice-shelf ¹ below.

During the brief three months of summer, from December to March, when the sea ice partly breaks up, the relief ship visits the bases with mail, supplies and fresh personnel; but for the rest of the year the bases are completely cut off.

The Antarctic is sterile and inhospitable. Almost nothing lives or grows there, except in the sea, and the bases are among the coldest and most lonely outposts on earth.

Because of the particular responsibility of a base leader for the men living and working under conditions which are abnormal, rigorous and often extremely hazardous, the Governor had asked me several searching questions before he finally decided to swear me in.

I remember his saying as he motioned me to a chair opposite his desk: "Well, Anderson, what made you decide to come down on a job like this?" He made it sound friendly, informal.

I looked out of the windows of his office at a vista of the Falklands. A lawn ran down to a narrow inlet of the sea, on the far side of which a low hill rose in a sweep over the head-

¹ A permanent mass of ice extending from the coastline to open water, sometimes hundreds of feet thick.

land, and I could see a flock of nonchalant-looking sheep browsing on the hill. The Governor's question was one I had been asked many times before in one form or another, but to which I had never been able to give a simple or precise answer.

It had all started on an impulse four months before, in July, 1954. I had recently returned to England from Korea, and had resigned my commission in the Regular Army. I was in London, and one morning found myself strolling in Hyde Park. As I came out by Alexandra Gate I saw the Royal Geographical Society opposite, in Kensington Gore, went in on the spur of the moment and asked to see the man in charge. The director was out, but his secretary asked if she could help.

"My name's Anderson," I said. "Have you any expeditions I could possibly go on?"

"We haven't anything at the moment," she said. "But why don't you try F.I.D.S.—the Falkland Islands Dependencies Survey? They man the Antarctic bases and are engaged in the systematic exploration of the British Sector."

The beginning of this adventure was as simple as that. I went straight from the Royal Geographical Society to the F.I.D.S. Scientific Bureau in Queen Anne Chambers, Westminster, and there met Dr. Vivian Fuchs, who was then the director.

"I must confess I know nothing about F.I.D.S.," I said, adding that I had been in Korea for the past three years and was therefore out of touch with current affairs.

"I doubt if there are many people in this country who have ever heard of our existence, but we have a dual rôle of occupying the territory politically and of surveying its potential," he told me. "A considerable amount of scientific research is carried out at the bases, and of course each base serves as a meteorological station where detailed weather observations are made day and night every three hours."

I came straight to the point. "What chance is there for an inexperienced person like myself joining F.I.D.S.? I have no scientific qualifications, but would like to go to the Antarctic

to work for the Survey. I don't mind what the job is, and I would be prepared to contribute something towards my expenses on the expedition."

Dr. Fuchs laughed. "If you did join F.I.D.S. we would pay you to go," he said. "But I'm afraid it's not up to me. You will have to apply to the Crown Agents, who are responsible for engaging personnel. They will take up your references, interview you, arrange for a medical—all that sort of thing. However, we are short of men of your administrative experience, and, provided we get the approval of the Governor in Port Stanley, there is a chance of your being appointed a base leader—and of Hope Bay."

A few days later I was interviewed by the F.I.D.S. selection board consisting of the Assistant Secretary, a man of about thirty-five named Johnny Green, who had been a base leader on the Argentine Islands and was now on the permanent staff of the organization, and Mr. Norman Lightup, representing the Crown Agents and responsible for the contract agreement I would be called upon to sign if engaged.

Green began by saying that they liked to give applicants a true picture of the life and work. "A lot of people have the idea that there is a great deal of excitement and glamour about going to the Antarctic. In point of fact, most of the time it's a dull, repetitive grind. By comparison, catching the 8.30 train to an office every morning is almost adventurous."

I said I was prepared to slog at the routine, provided I could also take part in the sledging journeys.

"Have you ever had to handle civilians?" he asked.

"Yes, but mainly Koreans and Japanese."

"You are being considered as a possible base leader," he said. "We appreciate that you've had a lot of experience as a commander in the Army, but I think I should explain that it's an entirely different matter being leader at one of our bases. The personnel are all British, most of them tough young men with plenty of enthusiasm, from all walks of life. Some will have a good deal more practical experience than you. Then, in the

F.I.D.S. tradition, a base leader does his turn as a 'gash' hand, responsible for all the chores and dirty work at base. There are no distinctions, social or otherwise. Everybody is called by his Christian name—nobody would dream of calling the leader 'sir'—and though in theory he has very considerable disciplinary powers, the Antarctic is a long way off, and he is expected to run the base by example, tact and good man-management rather than with a big stick."

"I understand," I said quickly. "When I applied to join F.I.D.S. I wasn't thinking of any special appointment. I would be happy to go in any capacity."

"I am not suggesting you are not adequate for the job, but I'm sure you realize our difficulty. Everything depends on the base leader—the morale and welfare of the men, the efficient running of the base, the entire survey programme, the civil administration of the area, even diplomatic exchanges with foreign nationals."

I learned later that occasional mistakes had been made in the selection of men for base leadership. One leader had suddenly taken it into his head that other members of the base were trying to undermine his authority. He started initiating fantastic and impossible schemes, and when these were not carried out accused the entire base of disloyalty and insubordination. He cabled headquarters at Port Stanley demanding they should all be suspended; this would not only have involved the immediate stoppage of salary, but every man dismissed would have had to pay his own passage home. However, the deputy leader sent another cable explaining the position, and what might have become a difficult situation was tactfully sorted out.

I think I can understand how that unfortunate leader must have come to feel the way he did. The charge of a base is a lonely responsibility without the absolute authority which a man in a parallel position would have, as for instance the captain of a ship. The base leader has to get his wishes carried out by devious means, often by subterfuge, and it only takes one man, one

obstructive and truculent personality, to make the leader's life hell.

The Antarctic can do frightful things to a man. Boredom and inactivity insidiously undermine morale. The utter loneliness breeds introspection. Grievances become exaggerated, irritations become obsessions and depression can rot into the soul. At one base a man shot himself. At another, a man went berserk, grabbing a chopper and turning on his companions. They managed to restrain him, but they had to keep him tied to his bunk for the next two months, until the relief ship arrived.

My replies to various other questions which Green and Lightup asked must have satisfied them because, when the interview came to an end, Green said he would recommend me as leader of Hope Bay. "But," he added, "I must emphasize that the final decision rests with the Governor."

I did know that a very thorough check had already been made on me, but I did not realize that, on the voyage down from Southampton in the F.I.D.S. relief ship, *John Biscoe*, I was being watched by William Johnston, the captain.

And now the Governor himself was having a final look, just to make sure nothing had been missed, and I was wondering how I should answer his question. Why had I decided to join F.I.D.S.?

My reply was partly the truth. "Sir, I have always wanted to go to the Antarctic since I read about Scott and Shackleton as a boy," I said. "Having just resigned my commission, I felt that if I did not do something about getting there now, I might never have the opportunity again."

I considered whether I should mention that I had actually made up my mind to come down because there was a great deal I wanted to get out of my system. I had felt in need of the mental and emotional shower-bath of a complete change, and the Antarctic seemed the right sort of place. But I did not say anything. I felt I could not have expressed what I meant without sounding theatrical.

I was restless and incapable of settling down to any sort of

steady job after three years in Korea. And I was sick and ashamed of the betrayal of the Koreans with whom I had fought. I had often been accused of trying to escape my responsibilities, of trying to evade issues, of not facing reality and so on. It was not that. I had made a break with the past, and now I wanted time to think.

"What did you do in the Army?" the Governor was asking.

"I was in the Parachute Regiment at the beginning of the war, and I served in North Africa and in Sicily, where I was wounded. Later I transferred to the Special Air Service, and served in France and Norway. After the war I went to Korea and worked with the guerrillas. I returned to England after the exchange of P.O.W.s."

"Now tell me why, after fourteen years, did you want to resign your commission?"

"Most of my service had been under wartime conditions," I said. "The idea of peacetime soldiering did not appeal very much."

He then asked me various questions about my home background, and I told him briefly that my late father had been an ecclesiastical architect, that my mother comes from just outside Dublin, that we lived in Cheltenham. I had gone to school at Beaumont, where I had distinguished myself by ploughing the School Certificate Examination with amazing regularity, and like so many others the problem of my future had been solved by the war starting in 1939. I had turned twenty in July of that year, and I started my Army career by enlisting as a trooper in the Royal Gloucestershire Hussars.

The Governor seemed satisfied, so without wasting any more time he handed me a Bible and a printed card with the form of oath for magistrates and justices of the peace. After I had sworn the oath he said: "I'll now put you in the hands of Secfids, who will tell you all you want to know."

On the way out of the room I paused to admire the stuffed Emperor penguin. "As a matter of fact, we're rather proud of

that," the Governor said. "It came from a rookery discovered near Marguerite Bay."

I looked at his face, but his expression gave nothing away.

Secfids, the F.I.D.S. Secretary to the Governor, was Frank Elliott, a tough, stocky and forthright Yorkshireman in his early forties. He had been in India during the war and had done a great deal of climbing in the Himalayas, and first came down to the Antarctic at the end of 1946. He had relieved Captain Victor Russell as Leader of Hope Bay, and after two years at the base joined the permanent staff of F.I.D.S. in Port Stanley.

I have heard it said that the remarkably good relations that prevailed among members of the British Mount Everest Expedition were attributable to the fact that they had a whipping-boy, an official on the Everest Committee in London, whom they blamed when anything went wrong. His ears must have burned, but apparently he helped to unite the several outstanding individualists who comprised the expedition.

In a similar manner Frank Elliott had acquired the distinction of being the whipping-boy of the bases. Down in the Antarctic he was the target for every criticism levelled at the administration of F.I.D.S. If anything was wrong with the rations, Frank Elliott was responsible for not having examined the consignment properly before sending it out. If the *John Biscoe* was held up or stuck fast in the ice, it was Frank Elliott again.

It was all quite unfair, because Elliott was competent, hard-working and just. He did not tolerate fools or slackness, but he was helpful and thoroughly versed in his subject, with an incredible memory for such details as ration scales, lists of equipment at the various bases and the position of depots cached at various points round the Graham Land Peninsula. Few base leaders ever succeeded in pulling the wool over Frank Elliott's eyes.

Whether or not he was aware of the unwitting rôle he played in sustaining the morale of the isolated men in the Antarctic

I cannot say, but the idea would have appealed to him. He loved the Antarctic, he was saturated with its lore and its traditions, and he was nothing if not loyal to F.I.D.S.

From me he wanted a detailed character report on the nineteen relief personnel I had brought with me from England, and he cross-questioned me on each one. After we had gone through the list, I said: "I'd be grateful for any tips you can give me on man-management in the Antarctic. How do you keep people from getting bored?"

"Work, work and more work," he said. "My advice to you is don't sit on your backside, or everybody else will want to do the same. Get people out sledging as often as you can without letting the routine base duties suffer, and don't wait for fair weather—you'll rarely get that where you're going."

I had heard that Elliott had been an energetic sledger himself, and had completed the longest journey from Hope Bay—775 miles down the east coast of Graham Land to Trail Inlet, and across the peninsula to Marguerite Bay on the west coast. There were only two longer journeys in the annals of F.I.D.S.—Douglas Mason's 1,120 miles from Marguerite Bay to the Filchner Ice-shelf on the south shore of the Weddell Sea and back to Marguerite Bay; and that of Dr. Fuchs who sledged from the same base to the south of King George VI Sound and back, a distance of 1,080 miles.

But there were months during the Antarctic season when no sledging was possible. Although I had little experience of peacetime soldiering, I knew the Army technique for sustaining morale during periods of inactivity. It is what is commonly called "bull." I asked if the same applied in the Antarctic.

"To a degree it does," Elliott said. "At a well-run base the equipment is properly stored in order, the hut is kept spick and span, and the fuel supplies are neatly squared off. But it all depends on the leader. If he is slack the others will be slack and the base will suffer in consequence."

"What does one do when chaps get difficult?" I asked. It was a problem I had thought much about during the voyage.

Elliott looked hard at me for a moment: "You have disciplinary powers," he said quietly. It was not the answer I wanted, but I realized he could not very well give me unorthodox advice.

The main weakness of my position was that I knew nothing about the Antarctic apart from what I had picked up from talking to ex-F.I.D.S. men, reading the records at the Scientific Bureau in London and attending a lecture Fuchs had given at the Scott Polar Research Institute in Cambridge. I had also been on a course at the Air Ministry Meteorological School in Stanmore. But I was going to be very much the new boy.

"Don't worry, you'll soon pick it up," Elliott assured me. "All you want to know is in *Operational Instructions*." He pressed a button on his desk and an attractive young secretary came into the room. "Rosemary, Major Anderson would like to see *Operational Instructions*," he told her.

There were three other secretaries in the F.I.D.S. office, each one equally attractive. The result was that I absorbed very little of the "Base Leader's Bible," though I sat for the next half-hour flicking through the pages, asking many questions.

I was loath to leave because it occurred to me that within a few days there would be no feminine company for a long period. For a brief moment a doubt crossed my mind, and I wondered whether I was doing the right thing in going to the Antarctic, cutting myself off from life and the outside world. I had wanted time to think, to make up my mind about the future. But was it really necessary to traipse all the way down to the bottom of the earth to get things sorted out? Anyway, it was too late to do anything about it now.

Chapter Two

It was near lunch-time when I left Government House and walked down to the white gate in the low stone wall surrounding the homely little residence, like two farm-houses joined together, one of timber, the other of stone. The sun was brilliant and warm, and there was no wind, not a suggestion of the almost incessant westerly gales which make it impossible for any trees to grow on the islands, except in a few sheltered gullies. There was a tangy smell in the air that evoked memories of the west of Ireland, and as I walked along the pot-holed road by the side of the inlet, I realized that the smell came from the smoke of peat fires, mingled with the scent of gorse which was growing in profusion on the hills.

I sat on a bank below some playing-fields and looked down at the inlet. The water was clear and I could see rocks along the shore overgrown with kelp, that thick seaweed like razor-strops, swinging towards the harbour with the gently ebbing tide. A flight of wild duck winged across the inlet, turned and disappeared over the hill. Otherwise the scene was as still as a picture.

A few minutes later a couple of large gulls alighted on the water with a loud splash, and again all in the picture was quiet. Then I understood the strangeness which had been puzzling me all morning. It was this almost tangible silence. I was not quite used to it after the sounds of the wind and the waves, the *John Biscoe's* engines, the clanging of the ship's telegraph, the voices of men and the barking of the huskies during the last four weeks at sea.

I got up after a while and walked on towards the town that had looked at first sight from the decks of the *John Biscoe* like a huddle of parish halls with red roofs perched on the side of a bald green hill. Presently I reached the main street with the

town's public buildings along the sea front; the little hospital, the secretariat, the public baths and gymnasium, the town hall used for the weekly cinema show, the gaol, the Anglican cathedral with a corrugated-iron roof, the Catholic church, the F.I.C. (Falkland Islands Company) head office and store.

Opposite the cathedral was the public jetty, with a schooner, the *Gambler*, moored alongside. I was intrigued by the sight of wild geese and duck piled on the decks, and asked a blond youth on board where they came from.

The geese, he said, had been shot on the bogs where they were so numerous as to be classed as vermin with a price on their beaks; a goose will eat as much grass as a sheep. They were foolish birds, the youth added. All you had to do was shoot one with a .22 rifle and its companions gathered round to hold an inquest; then it was a simple matter to pick off the rest of the flock because they would not fly away. The duck were not quite so easy. One of the "camp" managers had got them by a bog pool, hiding in the tussock grass, and shooting them as they flighted round and round in the first light of dawn.

The youth was a Falkland Islander, descended probably from the English settlers who arrived to colonize the islands a little over a century ago. Within a few generations he had emerged as a distinguishable type, with a vaguely Australian accent, and a background of treeless hills dotted with sheep and the deep blue Atlantic pounding the jagged coast.

Since, as he said, his father was a shepherd, his childhood would very likely have been spent in a lonely cottage miles from the "camp" settlement, and he would have been educated by itinerant schoolmasters, who, as there were no roads, travelled among the scattered families on horseback. For their social contacts the family would have turned to the settlement, with its shearing-sheds and presses, the bunkhouse where the single men ate and lived and everybody gathered for occasional dances, the married quarters, the manager's residence and the little store which was open twice a week. Highlights in their lives would have been the visits of the F.I.C. ship, the *Fitzroy*, to

collect the wool, and their annual visit to Port Stanley at the end of the shearing season, for a holiday with dances at the town hall, and race meetings and sports at the town's race-course.

Without a newspaper the Falkland Islanders knew little of the outside world, nor apparently did they care. Like this youth, they were fit, self-sufficient and happy, with an attitude which I think is typified by the reaction of the man from Peeble, one of the larger satellite islands with a population of twenty. He was sent to England with a team of Falkland Islanders to compete in the rifle championships at Bisley, and on his return he was asked what he thought of London, where the team had spent a week.

"Well," he said, "London is very pretty, but not as pretty as Peeble."

The *John Biscoe* lay farther along the front, moored aft the hulk of an old sailing vessel which served as the F.I.C. jetty and warehouse. The famous relief ship had come as a shock to me the first time I set eyes on her with her mast and crow's-nest barely projecting above the level of Berth 35 at Southampton Docks. Now as I approached her again, she seemed surprisingly small, with her lines distorted by a flattened bow like a tongue (she had been built during the war as an anti-submarine net-layer), and a bridge which had been considerably raised to assist in navigating through pack-ice.

I was not the first F.I.D.S. man who had expected something bigger. Bill Pearson, the bos'n, told me of one who came on board the ship and asked if it was the tender to take him out to the *John Biscoe*!

"No, this is the *Biscoe*, all 870 tons of her," Pearson had told the newcomer. "She mayn't look much and you won't like the way she pitches at sea, but she's good in pack-ice, and that's what matters when you're waiting at a base to be relieved."

She was a wooden ship, her timbers sheathed with green-

heart, the toughest wood of all, as a protection against the ice, and she was equipped with special steering-gear, echo-sounding apparatus and radar. With hydrogen cylinders and diesel-oil drums stacked on her decks, and several kennels aft occupied by huskies, the *John Biscoe* had a competent and business-like air. But travelling aboard her was no luxury cruise, particularly for F.I.D.S. personnel.

Sixteen of our number were accommodated amidships in a series of bunks in three tiers, while Dr. Ross Hesketh, a geophysicist, and I shared one cabin, and Dr. Paul Massey, who was acting as ship's doctor for the voyage, had another. We all ate in the expedition ward-room, but this was so small that our meals had to be taken in two sittings.

I arrived during the second-lunch sitting. I went to my place at the table, and Porky White, the mess-boy, brought me my soup.

Someone said, "You were so long with the old man, we thought you had got the sack already."

I looked round at my companions. They had all had haircuts and were looking unusually smart as we were in port. "I'm all right, but I had to give a character report on each of you fellows," I told them. "I had to tell the truth, so I'm afraid you'll be going back."

The banter continued. It was pleasant and amusing, and nobody minded because we were all on pretty good terms; but it had not always been so. Unfortunately we had not started out on the right foot, and I think I can trace the cause of it to a telephone call I received on Saturday, October 2, 1954, two days before we were due to sail.

A newspaper reporter began asking questions about where I was going, for how long and for what purpose. I was busy packing. My answers were brief and somewhat facetious and, when finally he asked, "Have you done any last-minute shopping?" I replied, "Oh yes, I bought myself a sheepskin liberty bodice and a Bible."

Next day when I opened the paper I saw to my horror the

headline "BRITISH ANTARCTIC EXPLORER DOES LAST-MINUTE SHOPPING." Then I squirmed as I went on to read something like this: "Major Bill Anderson, who is leading a British expedition to the Antarctic, is taking only one book to read in the frozen South. It is a compact edition of the Holy Scriptures. 'Not many of us have time to read the Good Book,' he said yesterday. 'I hope to spend the long dark polar nights trying to catch up. . . .'"

As far as I was concerned, the article was just a bad joke on the part of a bored and cynical reporter. I tried to laugh it off when I went on board the *John Biscoe* the following day, but in my embarrassment I imagined the F.I.D.S. men were not being particularly cordial, and I read into their reserve an implied censure of the kind of publicity I had got myself. I felt as guilty as if I had written the article, especially when I produced a microphone and portable recording machine, which I thought rather made me look as if I had the sort of high-powered B.B.C. and Press contacts who could fix anything. I was making recordings of our departure for *Expedition South*, a B.B.C. series about F.I.D.S., the first of which was broadcast that day, after we sailed. With everybody seemingly awed and apprehensive about me, I began to feel a bit of an outsider.

On top of that I made a psychological blunder on our first night at sea. I had been put in charge of the party, so I thought of giving a little pep talk in the ward room. I pointed out we were beginning to lead the kind of life we would have at the bases, and suggested the need for self-discipline and a good turn-out. I said it would be bad for us if we were to lie about in our bunks all day with nothing to do, and added that I had arranged with Norman Brown, the first officer, that the bos'n should find us sufficient work in the mornings to keep everyone busy. But it was the wrong moment for this talk, as the *John Biscoe* was pitching and rolling in a rough sea and a number of the party were feeling frightful.

Later I heard one of them remark, when he thought I was not listening: "More Army 'bull'—well, damn Soldier Bill for a

start!" Soldier Bill was the unfortunate nickname I had acquired ever since the first broadcast of *Expedition South*.

As the days and weeks passed our relations improved, but I was never entirely confident until after an incident that occurred as we were approaching Monte Video on October 27.

The sea had changed from the intense blue of the deep ocean to the greenish brown of the mouth of the River Plate, and a few of us were at the starboard rail watching the distant coast-line, with surf pounding on beautiful deserted beaches, groups of pine trees breaking the line of the horizon, and every few miles a village with whitewashed, red-roofed houses in the Spanish style. It was the finest day of the voyage. The sunshine was warm, the sea flat and calm after the rolling South Atlantic, and a light spring breeze had sprung up from the south.

We had all spent the morning pressing shirts and trousers and polishing shoes, and now we were waiting to catch a first glimpse of the city, excited at the thought of three days ashore. Two of the draft, who had previously been in the Antarctic and knew Monte Video well, were telling the rest of us where we should go to have the best time, when the first officer came up to me and said he wanted two F.I.D.S. men to stay on board in port to help with the cooking as one of the cooks was sick. Conversation stopped. The others looked at me, waiting for a reply.

I was furious, as we were all looking forward to a final spree before burying ourselves in the Antarctic. Besides, I could not very well detail two others and then go off and enjoy myself, so one of the unlucky ones would have to be me.

Brown was sorry, but adamant. To settle the matter, I went there and then to see Captain Johnston.

"Oh nonsense," he said briskly. "Of course your crowd can go ashore, the whole ruddy lot, all the time, as far as I'm concerned. You might let me have a list of how much money the men want to draw."

There were cheers in the expedition ward-room when I reported the captain's decision, and I immediately sensed a com-

plete change in the general attitude towards me. So much so that when I suggested that Massey should give a talk on V.D. nobody seemed to mind my Army methods, though in the middle of the discussion one man fainted.

By nine that night we tied up alongside the quay in Monte Video, and ten minutes later there was not a F.I.D.S. man in sight. In fact, nothing was seen of the draft until members began drifting back three days later accompanied by various new-found friends.

Now, after another three days, we were lunching in Falklands, teasing each other about that last fling, and comparing happy, carefree Monte Video, without customs or passport restrictions and gay with innumerable bars and night-clubs, with earnest, very British Port Stanley, where people could be black-listed in all of the four pubs for drinking too much.

As we suspected, we were to spend our time very differently here. Instead of the flesh-pots, we played a soccer and a rugby match against the crew of the frigate H.M.S. *Veryan Bay*, and were soundly beaten in both games. We attended a Remembrance Day parade at the Cross of Sacrifice in the public cemetery, where the Governor, the officer commanding the *Veryan Bay*, the defence force commander and the captain of *John Biscoe* laid wreaths. We drew our polar kit. We loaded bags of sand and shingle in our ship for the foundations of the new base at Anvers Island. Five of us did a local version of *In Town Tonight* on Radio Stanley. And I made a recording of a Christmas message from the Governor to the bases to be broadcast in *Expedition South*.

In the middle of this activity I paid a visit to the meteorological station with Gordon Howkins, the chief met. officer, and Don McNaughton, his assistant. From the outside it looked like a haphazard collection of huts on a piece of green land half a mile out of town, but inside it was efficient and well-run. Howkins went to great trouble to explain the whole system; how the reports received in code from bases were collated and

a forecast worked out. This was sent by radio to all parts of the world.

"Wherever you go on a sledging journey, I would like you to make detailed met. observations every three hours," he said.

"What happens when we are several hundred miles from base?" I asked. "We wouldn't be carrying the sort of radio transmitters that could get through to you."

"You can send me the reports on your return to base," he said. "They will still be useful. Conditions in the Antarctic vary so much between places even a short distance apart that every scrap of information helps in the study of the weather pattern."

The Antarctic weather is so severe that it has a marked influence on conditions all over the world, far more so than the Arctic. The difference between the two polar regions is that, while the Arctic is mainly an ice-covered sea, the Antarctic is a glacial continent. Both have bitterly cold winters, but in the north, because of the mellowing influence of the sea, there is a brief hot summer when flowers bloom and quick-ripening crops can be sown in latitudes corresponding to that of Hope Bay. It is believed that the North Pole itself has a thaw in June. But in the extreme southern latitudes it never warms up in summer. Even Hope Bay, outside the Antarctic Circle, rarely has one month in the year when the mean temperature is above freezing.

We sailed the following evening at six, with the majority of the town's population of a thousand gathered on the quay to see us off. I was on the bridge of the ship recording the scene, and above the shouting and the noise my microphone picked up a slurred voice calling out: "So long, Jack! . . . Cheerio, Jack! . . . Bung-ho, Jack!"

I looked over the side, curious as to who Jack might be, only to find that one of my colleagues, happy with many last drinks with over-generous friends, was addressing his valediction to no less a person than the officer commanding H.M.S. *Veryan*

Bay. He was waiting at the foot of the gangway, in full-dress uniform in deference to the Governor, who was sailing with us on his annual tour of the bases.

It was an extremely tricky situation. Obviously the member of F.I.D.S. could not be ignored, nor clearly was it the right moment to call him to order since he had an approving audience of rough-and-ready Falkland Islanders, who were never particularly well disposed to the officers of visiting ships. On the other hand, it was beneath the naval officer's dignity to make a joke of it.

"Jack, you old bastard!"

That, I thought, was a bit too much, but I was filled with admiration at the adroit way in which the Navy coped by giving a semi-salute which conveyed a tolerant understanding without, as it were, any official recognition of the man's existence. Then the Governor arrived on the scene and the officer escorted him on deck.

After a while those who were not sailing came ashore. The *John Biscoe* cast off her moorings, and in a moment we were slipping away from the cheering and waving crowd on the jetty. Now the ship was vibrating again with her engines working and we were moving down the inlet towards the open sea. I put away the recorder and went to the after-deck where others were quietly gazing over the stern.

We watched the little town diminish in the evening mist, until we could only see the flashing light at the entrance of the inlet. That too disappeared in time. We were ploughing southwards through the heaving, foam-flecked South Atlantic Ocean. Seven hundred miles farther south was Graham Land.

Chapter Three

THAT night heavy rain spattered the decks of the *John Biscoe*. A wind sprang up, and within half an hour the ship was being tossed and buffeted by a South Atlantic gale. In the fading light I could see all round us mountainous waves with fuming crests, as the ship ploughed her way through them, lifted one moment so that her propeller was exposed, the next wallowing sluggishly in a trough as columns of green water crashed down on her decks and foamed out of the scuppers.

I found it difficult to keep my feet on deck, so I went below and turned in. But it was almost as hard to avoid being thrown out of my bunk. I wedged pillows between my back and the wall, securing my position by pressing my knees against the wooden uprights of the bunk, and in that way finally managed to get some sleep.

When I woke next morning the wind had abated considerably. I dressed, had breakfast and went to the after-deck to clean out the kennels where the husky population had been increased since Monte Video. There we had picked up four young dogs sent us by the Canadian North-west Mounted Police.

Later in the morning the Governor sent word asking me to come to his cabin.

"I wanted to put you in the political picture," he said. "Pour yourself a drink." I did as I was told. "As you already know, one of F.I.D.S.'s functions is political—indeed, this has shaped the structure of the organization in the past ten or eleven years."

For thirty years before the outbreak of the Second World War there was no question of Britain's right to the British Sector of the Antarctic. We had claimed the Falkland Islands Dependencies in 1908, basing our claim on the fact that the six

geographical units comprising the area had each been discovered and annexed for Britain by British subjects. We had administered the territory where possible, controlling the whaling and sealing industry centred on South Georgia, and ships of the Discovery Committee, with such famous names as the *Discovery*, *Discovery II* and *William Scoresby*, had systematically explored and studied the remoter parts of the Dependencies. On the mainland itself the British Graham Land Expedition, under John Rymill, had spent three summers and two winters, from 1934 to 1937, mapping several hundred miles of the west coast of the peninsula.

When the Second World War had started it was decided to shelve the study of the Antarctic for the duration. That decision would have remained in force but for the chance call of a British warship, H.M.S. *Caernarvon Bay*, commanded by Lieutenant-Commander E. W. Kitson, R.N., at Deception Island in January 1943. Kitson was looking for German raiders and had come to Deception to see that the excellent harbour and abandoned whaling-station were not being used as a base for raiders operating in the South Atlantic. Kitson saw no evidence of the enemy having been there, but when a party from the ship landed they found a bronze cylinder left by an Argentine vessel, the *1° de Mayo*, claiming that possession had been taken by the Argentine Government of the sector lying between longitudes 25° West and 68° 34' West and south of latitude 60° South.

It seemed that the Argentine had taken the opportunity of our being preoccupied with the war to establish a claim to what was virtually the Falkland Islands Dependencies.

Kitson acted on his own initiative. He ordered all traces of the Argentine claim to be obliterated, the Union Jack hoisted and a record left of the British ship's visit. The bronze cylinder was later returned to the Argentine Government in Buenos Aires. However, the *1° de Mayo* went back to Deception Island in the following year, the Union Jack was hauled down and the bronze cylinder replaced.

It was now obvious that the Argentine was attempting a coup in the Antarctic, and to forestall her a small military force under the code name Operation Tabarin was sent to occupy Deception Island. It was commanded by Lieutenant-Commander J. W. S. Marr, R.N.V.R., who had been with Shackleton in the *Quest*. In February 1944, Base B was established at Deception, and an attempt was made to land at Hope Bay, but severe ice conditions prevented the ship, the *Fitzroy*, from getting in. However, the following February, the *Eagle*, an old Newfoundland sealer, managed to crunch her way through the pack-ice and reached Hope Bay. A hut was built and Base D was established.

The next summer season brought another British ship, the *Trepassey*, with stores and personnel for further bases at Cape Geddes, the Argentine Islands, Admiralty Bay, and one as far south as Marguerite Bay, where Surgeon-Commander E. W. Bingham, R.N. became base leader. Bingham had been in charge of the sledge dogs on the British Graham Land Expedition, and at Marguerite Bay he undertook the training of the dog teams which had been specially brought down from Labrador. The plan was that sledging parties, travelling northwards from Marguerite Bay and southwards from Hope Bay, should begin the detailed survey of the Graham Land Peninsula.

That year the administration of the bases was reorganized. As the war was now over and there was no further need for secrecy, the name Operation Tabarin was replaced by the ungainly mouthful, Falkland Islands Dependencies Survey, and the character of the project altered to one concerned primarily with survey and scientific work and the maintenance of the British occupation.

Why were we so determined to hang on to a frozen wilderness? There were several reasons. Strategically, the Dependencies were important to us since we were not prepared to allow the Argentine to be in a position to control the southern side of Drake's Passage. There were our whaling interests in the seas, and on the mainland itself it was necessary to maintain our

position. Mineral deposits were believed to lie under the ice-cap, although only coal had been found so far in any appreciable quantities; with the increasing world shortage of minerals any worth-while deposits in the British Antarctic Sector could be of inestimable value to Britain, since mining them was feasible in some parts, using techniques developed in very cold areas such as Alaska and Spitzbergen. And there was a further consideration, one which appealed to the visionaries: airfields might be needed on the Antarctic Continent when trans-polar aviation was no longer a dream of the future.

Meanwhile, the Argentine had reiterated her claim to the major part of the Falkland Islands Dependencies, and Chile had followed with a similar claim which overlapped that of the Argentines. Both countries now had bases in the Antarctic, and the political situation was delicate, with British and Argentine warships operating in the area, and diplomatic protests being delivered at the bases and on the high seas. The one saving grace of the whole unpleasant situation was the courtesy and charm with which these gestures were generally made.

The Argentines were established at Hope Bay, and the Governor briefed me specifically on how we should act towards them. We were to regard ourselves as hosts and the Argentines as guests. "Be courteous and helpful," the Governor added; "but if they violate protocol in any way or put up any kind of building, however small, then you must deliver a protest."

I had already heard of other base leaders' experiences delivering protests to the Argentines, when the problem apparently was that of being diplomatically correct with people who were usually waiting for any excuse for a party. One leader who went with a protest to the neighbouring Argentine hut was so magnificently entertained that he felt too embarrassed to hand it over and left without doing so. However, he returned a few days later, bent on carrying out his uncomfortable duty, only to be welcomed again with such generosity that when the time came to go he could not bring himself to take the protest out of his pocket, and for a second time went away without delivering

it. Rather than pay a third visit and perhaps give the impression of abusing their hospitality, the base leader let the matter drop.

The policy of asserting our position as hosts had occasionally resulted in situations that were pure farce. One incident was connected with the tour of the Argentine Minister of Marine aboard one of their relief ships, which arrived at an island where the British base leader, a conscientious sort, decided to protest against its coming in without permission.

In order to carry out his mission the base leader had to get to the ship but, unfortunately, when he tried the outboard motor it would not start, and when he set out to row the boat began to leak. He should have turned back but felt he had committed himself, and he went on, eventually reaching the Argentine ship with his boat nearly half full of water.

However, he was received on board with great courtesy, his protest accepted with good humour and he was then given a magnificent lunch. Four hours later the Minister, the captain of the ship and the base leader came up on deck, Anglo-Argentine relations having been strengthened by many repeated toasts of friendship. As a final gesture the Minister presented the British base with half a carcass of beef—the first fresh meat the others at the base would have seen for a year. Unluckily for them, their leader decided to take it back with him in the dinghy, instead of asking for it to be sent ashore in the ship's launch. He had forgotten that his craft was leaking, and although the Argentines helped by bailing out the water before he set out to row back, it made water so fast that he had reluctantly to jettison the meat on the way across to keep afloat.

The sequel was to follow. Little realizing the political implications of the Minister's visit, the base leader sent a routine report to Port Stanley. The then Governor, Sir Miles Clifford, reacted immediately, sending a cable to the Minister, apologizing that a British ship had not been present to escort him as a distinguished guest through British territorial waters, and adding that a frigate of the Royal Navy was being sent right away. The Argentines, however, were just as determined to act

as hosts themselves, so that, when the frigate caught up with the supply ship, both continued round the bases together, each insisting in the politest terms on escorting the other.

I was told that I should try to avoid any such musical-comedy situations. "There's no harm in your being friendly with the Argentines in Hope Bay," the Governor added, "but remember in your exchanges of hospitality that this is a serious matter. The case has been put before the International Court at The Hague by Her Majesty's Government, but the Argentine has refused to submit to arbitration, which rather suggests she is sensitive about the weakness of her claim. The important thing is that no incident should occur that might possibly weaken our position and strengthen theirs."

I assured the Governor that we would behave with the utmost correctness. Then, after discussing some administrative details, I went on deck to find a group of F.I.D.S. men at the starboard rail, looking at the first iceberg of the voyage. It towered above us like a huge white castle a hundred feet high, and as we passed under its lee I could distinguish layers of rock-hard *névé*, the snowfall of successive years, descending from the top of its battlements and reaching down into green depths six or eight hundred feet below. That berg was a symbol. From then on we began to feel we were in the Antarctic.

We were approaching the greatest ice mass in the world, a glacial continent of five million square miles, far larger than Europe or Australia, and about half as much again as the area of the United States. Overlying this vast expanse of land is an ice-cap which reaches an elevation of 11,000 feet near the South Pole. From that point the ice is forced outwards under the tremendous pressure of its own weight, passing through or over mountain ranges and decreasing in height, till at the coast it averages about a thousand feet. Here it debouches into the sea, where all round the coast-line of Antarctica bergs are calved to

form immense plateaux of floating ice, sometimes hundreds, even thousands, of square miles in area. One sighted off the Ross Barrier several years ago was estimated to be a hundred miles long and fifty miles wide.

Bergs drift in the belt of pack-ice, 150 miles wide, that surrounds the continent. They move with currents in a general east to west direction. A number of bergs stray away from the pack, occasionally reaching latitudes almost as far north as Monte Video. We encountered them more and more frequently as we headed southwards for the South Shetlands, and I recall the excitement when the shout of "Iceberg!" brought us all out on deck.

To my mind it was one of the best parts of the voyage. For hours we used to stand on the after-deck gazing out at the dark greenish-blue wake, with flocks of sea-birds swooping and following us. For the first time we breathed the clean cold Antarctic air that cut into the lungs as we took deep draughts of it.

Four days' steaming from Port Stanley brought us to Admiralty Bay in the South Shetlands, a whaling centre before the days of the factory ships; all that remained of its past importance were the vertebræ and ribs of whales which littered its deserted shores. Ice-floes and bits of brash¹ filled the bay, and I saw my first penguins standing on some of the floes, rather like pompous naval officers lined up on the decks of ships in some naval review.

We anchored about two hundred yards from the base hut, with its Union Jack fluttering from a flag-pole at one corner. On a ridge above the hut I could see a cairn with a cross surmounting it—the lonely grave of Eric Platt, the base leader who had died while surveying a near-by island.

The Governor went ashore in the *John Biscoe's* motor-boat to inspect the hut, which I found spotlessly clean, snug and comfortable when I followed later. Five men occupied this small meteorological station—John George, the base leader;

¹ Fragments of floating ice, not more than 6 feet across.

Ron Tapp, Rod Nalder, Graham Ramsey and Barry Goldborne, who all came back to the ship that evening for cocktails in the Governor's cabin and a film show in the ward room.

Next morning was fine and clear, and we began loading supplies for the base into the *John Biscoe's* scow, to be ferried to the icefoot¹ where they were landed. Lashed to the ship's motor-boat, the scow made several trips, while a number of us, including the Governor, moved the crates and boxes from the icefoot to the hut. It was hard work, as the snow was very soft and we sank up to our thighs. About midday a wind sprang up, blowing a lot of brash and floes down from the edge of the glacier at the head of the narrow inlet.

The water between us and the *John Biscoe* rapidly became covered with bumping and grinding ice, so we all piled into the scow to get back to the ship before we were cut off. This proved a wise precaution, as the ice thickened so much in the afternoon that the scow and the motor-boat had to be lifted on board to prevent their sides being damaged.

Bad weather held us up all next day, but the day after was fine and we continued landing the stores. The wind dropped, and it was so warm we worked stripped to the waist. Again the Governor was among us, but later in the morning he took Paul Massey, Ross Hesketh and Peter Hooper ski-ing on the steep slopes behind the hut. They had asked me to accompany them, but I wanted to make some recordings of skuas which I had seen feeding on seal carcasses on the beach.

Apart from a little practice at the London Zoo with Eric Simms of the B.B.C., I had never previously recorded wild life, so I cautiously approached the group of brown-and-grey flecked birds tearing at the dead seals with their long, savagely hooked beaks, and squabbling noisily over pieces of meat and blubber. To my surprise they ignored my presence, so that I was able to place my microphone within a few feet of them. When I played back the recording their weird ill-tempered shrieking

¹ The place where the land ice joins the open water or ice-shelf.

came over very well, without interference from wind or other background noises.

After lunch I was asked if I would like to go in the motor-boat to the Penguin Bay rookery, about four miles from the hut, where the Governor and some of the crew were planning to collect penguin eggs. I gladly accepted the offer, and took along my recorder, as I had heard that some elephant seals had been seen mating strenuously near the rookery. I thought it might be interesting to get the love-song of those ludicrous, blubbery creatures. Unfortunately we saw no elephant seals, but I did manage to record the calls of the penguin population.

When we got back, Trevor Vine-Lott asked me to help him with killing and gutting crabeater seals as we planned to take fifty with us to Hope Bay, where they were usually scarce. I approached the task with extremely uncomfortable feelings. The whole thing might have been less unpleasant if they were dangerous or made some attempt to get away, but they were harmless, pathetic creatures with sad, tearful eyes, whose atavistic sense of fear only protects them in the water from their natural enemies, the killer whales and leopard seals. On land they will lie watching their companions being gutted next to them without attempting to move.

They were easily knocked out with a blow on the nose from an ice-axe before their throats were cut. With practice I learned to kill and gut a seal in under a minute, but as long as I stayed in the Antarctic it was a job I hated and always did my best to avoid.

Next morning it was very cold. The sea was covered with broken ice called "brash", with frazil ice, that is, plates of ice in suspension in the water, giving it an oily or opaque appearance. Still, we did manage to complete the supply operation by tea-time, and at six o'clock we weighed anchor, turned in a half-circle and sailed out of the bay. The sun, setting behind a high glacier, dyed the ice in the bay a bright pink, and the crab-eater seals lying on some of the floes watched us go with their wet, tearful eyes.

That night we ran into very open pack-ice—a seascape of weird, bluish-white shapes of scattered bergs and bergy bits, the size of cottages, heaving in a gentle swell. As we went on, the pack began to close in, suppressing the wild Atlantic, till presently we were easing our way through pools like glass between the floes, and up leads as they parted and opened before the wind.

If a floe blocked the entrance to a pool we stove through it; and with my microphone hung over the bows I recorded the grating, cracking, crunching sounds of the ice yielding before the tough greenheart of the ship's hull. It was exciting for those of us whose only acquaintance with pack-ice had been through pages of polar literature, but for the crew it meant the hardest work, from the man up in the crow's-nest, picking out the leads, to the engineers below, ready to boost their shaft horse-power when the captain wanted to charge the ice.

Negotiating pack-ice is a difficult and dangerous technique, requiring a great deal of experience and a high order of seamanship. To begin with, navigation is complicated by the gyroscopic compass having to be turned off to prevent its being damaged by the jarring of the ship against the floes, and at times it is impossible to estimate distance travelled when threading a winding course through leads and round areas of heavy ice, frequently stopping and reversing when the ship reaches an impasse. Added to this, a ship may drift fifty miles a day in the pack. Fog, grey skies and blizzards often prevent sun observations being taken to fix the ship's position for several days on end. Yet Captain Johnston could estimate his position in all weathers with uncanny accuracy, a flair which he has in common with other great ice skippers.

The hazards in pack-ice are many and unexpected. Because of the prevailing direction of the drift from east to west, an experienced ice skipper always puts in on the west side of any geographical feature, such as a promontory, as there is generally a pile-up of ice under tremendous pressure of the east side. A ship caught in pressure ice could be easily crushed. The his-

tory of Antarctic navigation abounds with such tragedies, particularly in the days when ships had perpendicular sides and depended on sail and low-powered engines to get them out of trouble. Shackleton's *Endurance* was sunk with her sides stove in by pressure ice, and the journey the crew made over the pack to Elephant Island, and Shackleton's voyage in an open boat across 800 miles of the stormiest seas in the world to South Georgia to bring help, is, I think, one of the greatest stories of the Antarctic.

Bergs are another serious danger in the pack, as they spend a haphazard and erratic career wandering in the grip of currents, independent of floes and smaller ice, which is generally more affected by the wind. Deflected by shoals and bumping occasionally into projecting tongues of land, bergs may run aground, and remain stranded, until melting and wave erosion wear away part of the submerged ice mass, and they continue to drift. Their equilibrium may become disturbed, so that they capsize to expose strange glistening profiles of pinnacles embedded with rocks and other matter, and caverns filled with dark green twilight.

The lee of one of the great tabular juggernauts is the best place to ride out a storm, as there is generally smooth water within half a mile of its ice-cliffs, where a ship can shelter in safety while a churning mass of pack-ice streams past on either side.

Woe betide a ship caught on the wrong side of an iceberg! A friend who had been to the Antarctic in the Norwegian sealer *Norsel* told me of a terrifying experience when the ship was stopped by very close pack-ice, and a gigantic berg bore down upon them, moving with the wind at five knots in the grip of a current, ploughing up the pack-ice so that it began bucking with a loud cracking and grating. To those on board it seemed almost certain that the *Norsel* would be lifted out of the water and crushed in what looked and sounded like a cataclysmic upheaval of a past glacial age. But by backing and charging the ice with every ounce of the ship's power, the captain managed to

force a passage through the floes and get clear before the berg went by on its inexorable course.

Two factors determine whether a ship can get through pack—the thickness of the ice and the amount of water between the floes. In open pack a ship can make its way, even when heavy floes bar its progress, by pushing them aside, charging them in a curve instead of a straight line, then bouncing off with a shudder in the direction the captain intends to go, and coming to a stop with engines racing at full speed ahead for several minutes while the ice slowly gives way. In close pack this cannot be done so easily, as there is less open water into which the floes can be pushed, and comparatively thin ice can hold up a ship as it has to push virtually against miles and miles of ice.

If the pack is too close and heavy for a ship to force a way through, the captain can heave to and wait, as the ice is in a constant state of movement, and the situation will change in a matter of hours, unless of course it is late in the year and the sea freezes solid round the ship. Then the last resort is dynamite, and it becomes a race against time.

The technique needs several skilled men working as a team. A hole is made in the ice with a crowbar eight feet from the ship's side, and from two to six sticks of dynamite are fused and fastened at the end of a bamboo pole. The captain gives the order for full speed ahead and, while the propeller is churning, the loose pieces of ice are pushed with poles around to the stern, where they are carried away in the wake. Then the engines are reversed. The fuse is lit, the bamboo thrust down the hole well under the ship, and a few moments later an explosion shatters the ice. Again the ship goes forward crashing into the ice, and the crew gets ready for the next blast. In a difficult situation three or four charges may be exploded at the same time, and the ship is rocked as if by a near miss from a bomb.

Naturally, a ship's performance in pack-ice depends on its weight and power, so a modern ice-breaker is a tough and aggressive ship of about 4,000 tons, protected by a specially thickened steel hull. With a cutaway bow it rides up over the

ice, breaking through by its weight and that of thousands of gallons of water rapidly pumped into heeling tanks in the forward part of the ship. By pumping water from side to side it can rock itself, if necessary, to break free of the grip of freezing seas.

The *John Biscoe* possessed none of these refinements, but she had as good a crew as any ice-ship in the world, and when it comes to negotiating pack, seamanship counts. She was to have a pretty rough time on that voyage, and to damage her steering gear. But that was after Hope Bay.

The pack is unpredictable. Whereas Hope Bay is usually difficult to approach (in 1944 the *Fitzroy* could not get through), this time the *John Biscoe* did not meet much resistance. I remember waking on the morning of November 19, and noting that it was five o'clock and the engines had stopped. I suddenly realized where we were and jumped out of my bunk. Excitedly I began to dress.

Chapter Four

I CAME on deck to find the sun shining brilliantly on Hope Bay, with a light breeze rippling the surface of the sea and showering it with sparkle. A crowd of bergy bits lay half a mile away like yachts at the start of a race. Around the ship thousands of penguins were swimming, leaping out of the water or popping up unexpectedly on floes. Ahead of us the blinding white Antarctic continent rose up from an intensely blue sea.

Two mountains dominated the vista, or rather two majestic personalities presided over it—one named Taylor, the other Flora. Between them, Depot Glacier swept down to a narrow inlet at the head of the bay.

Mount Taylor was on the right of the glacier, the south-west as you looked at it, towering above the long sharp crest of Blade Ridge, and glowering with an ill-tempered craggy brow surmounted by a wild, unkempt wig of cloud. In time I came to dislike Taylor intensely, always scowling and brooding over us, and seemingly conjuring up the bad weather. Whenever we saw plumes of drift snow tufting on its white summit, we knew the wind was blowing up on the plateau behind. Before long a blizzard would hit us in the Bay.

Extending to the right above the shore of the inlet, the crest of Blade Ridge gave way to ice-cliffs that were broken by a jagged series of nunataks,¹ like black rock teeth with cavities stopped with glacial silver. At the end of this primordial denture was its largest and most prominent tooth, Andersson Nunatak. From here the ice-cliffs continued northwards to Sheppard Point, at the northern extremity of the bay, and beyond it in the distance rose the graceful profile of Mount Bransfield, on the northernmost tip of the mainland of Antarctica.

¹ Faces or pinnacles of snow-free rock.

Looking to the left of Depot Glacier, a wall of rock rose abruptly to the peaks of the Scar Hills. Behind, and to the left of them, was Mount Flora shaped like a huge throne with a soft cushion of white velvet fitting snugly between sheer rock arms.

Flora was by far the most striking feature in the area, even though not quite as tall as Taylor. While Taylor was forbidding and full of menace, Flora was beautiful, friendly, gentle and inviting. It was so named because of the large number of fossilized ferns found on the upper slopes, and on fine days when work was not too pressing we used to go up and look for specimens.

From the snow cushion the ground sloped gently to a rock outcrop, then steeply to Hut Cove in which the *John Biscoe* was anchored. The Argentines and ourselves lived above Hut Cove, with Seal Point on the right as you looked at it from the ship, and Grunden Rock a mile away to the left. Between the two was a curved shingle beach overhung by a corniced ice-foot, like a wave that had suddenly frozen in the act of breaking. In the centre of Hut Cove was the focal-point on which the detailed survey of the whole area was based—a concrete pillar built on a small outcrop of rock, its exact position, latitude $63^{\circ} 24' 02''$ South, longitude $56^{\circ} 59' 01''$ West, fixed by angles taken on sixty-seven stars.

The two Argentine huts lay side by side near Seal Point, with their blue, white and blue flag fluttering from a flagstaff between. Our hut was away above it, 500 yards up the slope, tucked in snugly by snow-drifts. It looked clean and business-like, with its Union Jack vividly contrasted against the immaculate white backcloth, but I wondered why it had been built so far from the icefoot where the stores were to be landed. We were obviously going to spend weeks moving the 130 tons we had brought, so I asked Murdo Tait for an explanation. He had already spent two seasons in Hope Bay, and was returning for his third.

He pointed to a salmon-pink discoloration on the land extending to the right of the Argentine huts. "Willie," he said,

"that's the droppings of sixty thousand penguins. You'll be glad we're not sited on the icefoot. As it is, the smell is bad enough when the wind changes occasionally to the north-west."

The dogs were the first to be landed. They barked excitedly, rolling in the snow and eating it, the first they had tasted since Greenland. They had never really learned to lap water, and had suffered intensely from thirst as we came down through the tropics. As soon as they calmed down they were taken up the slope, to the dog spans near our hut. The spans consisted of a number of thick wire ropes strung between steel pickets set upright in concrete. Nine dogs were chained to each span, with sufficient space between them to keep them clear of each other's teeth.

About nine o'clock I saw the dinghy coming across with three men. They were Dr. Bill Turner, the base leader, Geoff Brookfield and Joe Lewis. Keen to talk I introduced myself to them, but after shaking hands with me Turner said he had to see the Governor, and the other two went off to find Tait whom they knew well.

Since leaving Port Stanley I had been trying to pin the Governor down to giving me a specific brief as to the work I was expected to carry out that season, but I was still vague. When Turner came on deck again I asked him what the programme was.

"Oh, you'll find something to amuse yourself," he said. He looked up at the hut and added: "We've been spit and polishing like mad. I wish the Governor would come and inspect the place today because tomorrow it's sure to be in a shambles."

I thought as I looked at him that Turner had a glassy stare, and I wondered if the Antarctic would get me the same way. I asked about the Argentines.

Pointing to the backbone of the Tabarin Peninsula, to a col known as Summit Pass, he said: "When the Argies get there they smarten themselves up and come down marching almost to attention—and if their colonel is with them the whole base

turns out to welcome the 'conquering hero'. We, on the other hand, turn most of the dogs loose at the pass and the chaps at the base have to come out and catch them."

Soon after that Turner got into the dinghy with the other two, and they returned to the shore. I was a bit annoyed. Turner, I thought casual, to say the least, and Lewis and Brookfield seemed to be ignoring me deliberately. It was only when my own turn came to be relieved that I understood. I did not welcome the sight of the relief party and resented its intrusion on the even monastic tempo of our lives. In addition, I was anxious to read my mail, and it was an effort to be civil to new people coming in and asking tedious questions.

After lunch I went ashore and walked up to the base. Work had stopped for tea, and I was immediately made welcome. The cook of the week, Alan Precious I believe, had laid on a magnificent spread, with currant bread, two sorts of cake, mustard and cress sandwiches, bread and butter and jam. However, my enjoyment was somewhat marred by the thought that I would never be able to approach this standard of catering when my own turn came.

Some of the men who had ordered themselves luxuries from Port Stanley began opening their parcels like excited school-boys. Dick Kenney, one of the surveyors, got a crate of Mars Bars, which he began devouring immediately. But there was a howl of disgust from Julian Taylor, the dog physiologist. He had sent a cryptic message to a friend in Port Stanley asking for six bottles of "developer", meaning "whisky". Apparently the friend had forgotten their mutual code because it was photographic developer that arrived. Taylor raged, as the only liquor we were allowed was our regulation issue of one small can of beer a fortnight and a bottle of gin or whisky for the twelve of us on Saturday nights.

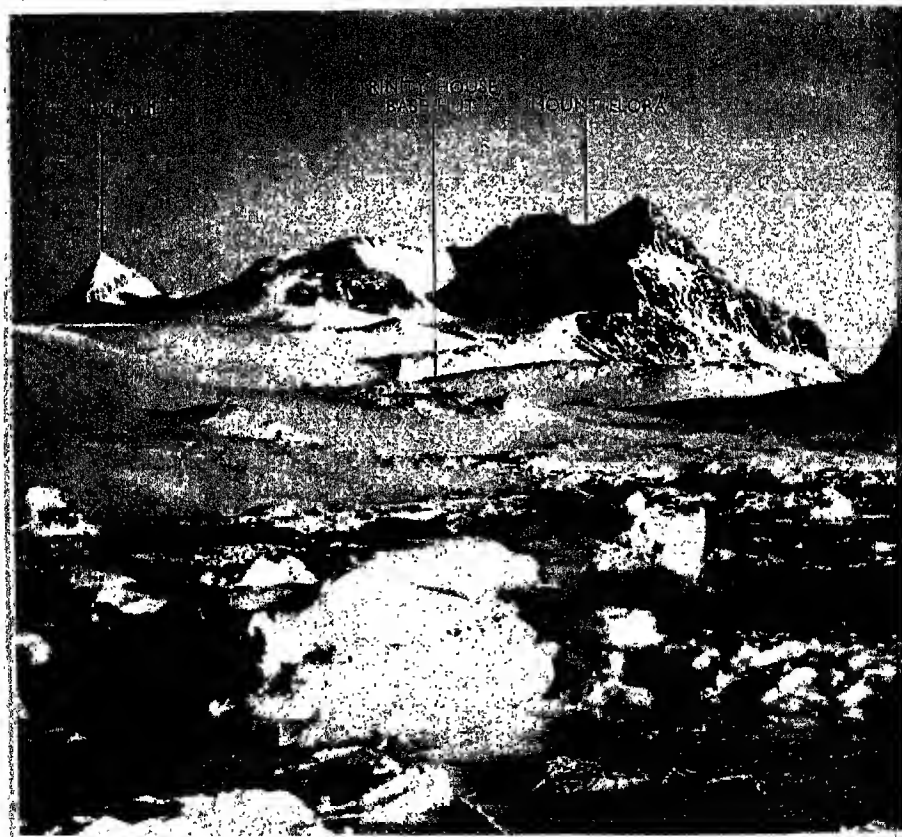
At seven that evening most of the men went to a film show aboard the *John Biscoe*. I remained behind in the hut with three others. I remember how bitterly cold it was in the ward-room, with only one fire burning. I had pulled on all the sweaters I



Taylor and Worswick bringing up stores to "Trinity House," the hut built
500 yards up the slope from the icefoot

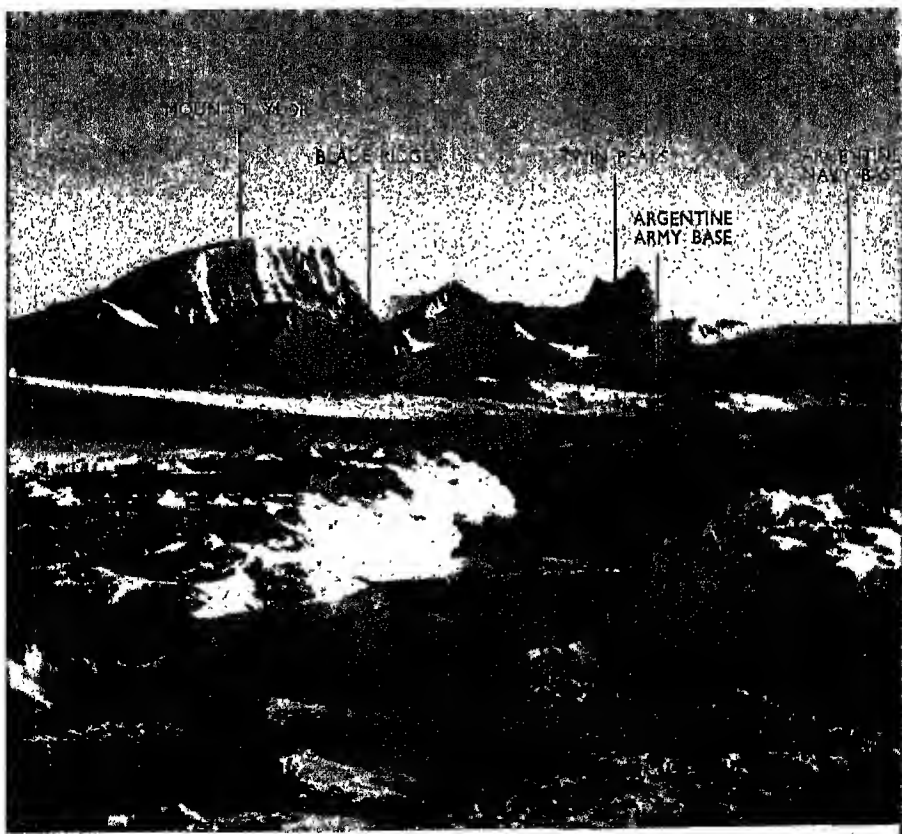


Taylor and Precious weighing one of the dogs at base. The pups were weighed every two weeks, and other dogs before and after each journey.





The *John Biscoe* firmly held in the frozen pack. Games of football were played on the surrounding ice





Officers and crew of the *John Biscoe* help unload stores on the icefoot. In the foreground some of the 150 dead seals brought in to feed the dogs. Grunden Rock Light lies beyond the bay



Alan Precious feeding the dogs. Each husky would grab a six-pound piece



Kenney (right) and Worswick rolling 50-gallon drums of diesel oil past

possessed, yet the others who had become acclimatized were quite comfortable in their shirt-sleeves.

Next day we began sledging our supplies up to the hut. For two days the weather held fine, until a blizzard blew down from the plateau, stopping all work and keeping us inside the hut while the wind howled outside and the drift snow swirled past the windows. Snow crept under the entrances until it lay inches deep in the passage near the lavatory at one end of the hut and in the sledge workshop on the other side. At times it seemed the whole hut must blow away, and I remembered with gratitude that the structure was bound to the rock below us by steel hawsers. They were stretched over the roof and secured by bottle screws to concrete foundations.

At about three o'clock I was in the met. office, watching with fascination the dial of the wind-speed indicator as it registered gusts of seventy to eighty knots. Turner came in with Ian Clarke, his deputy, and said they were going out to feed the dogs. "Do you want to come?" Turner asked.

I could see nothing but the drift from the window.

I went back to my bunk where Tait came up and helped me pull on my polar kit for the first time—anarak, wind-proof trousers, snow-boots, balaclava and heavy-duty gloves with two pairs of "inners."

"Don't forget your compass," he said, putting one tied to a cord round my neck. "If you got separated from the others you couldn't find your way back without a compass."

Then Tait told me what had happened to him the year before when he went outside for met. observations during an eighty-knot gale. The wind had lifted him off his feet and thrown him down the snow-slope, rolling him, whipping him, bumping him towards the sea. With a supreme effort he had stopped himself fifty yards short of the icefoot by clawing at the snow with his hands and digging in his toes. He had crawled back to the hut, having to keep as low to the ground as possible to prevent the wind from getting under him.

"You'll be all right if you keep yourself low and bunched up," he added.

"I'll do that," I assured him.

"Good. Now go out and do your stuff. You look like John Mills in *Scott of the Antarctic*." He gave me a friendly thump on the back, as I went to join Turner and Clarke waiting in the sledge workshops.

The blizzard punched us in the face as we stepped out of the hut. It was like a parachute jump when the slipstream hits you, knocking the breath out of your body. With icy needling fingers the wind held our mouths and nostrils, making it almost impossible to breathe unless we turned our faces away from it. Drift was slamming up from the ground in piercing, blinding powder, and I could barely see a couple of yards ahead of me as I struggled against a wall of wind pressure.

My companions knew their way instinctively to the pile of seal meat. It was frozen and crumpled like milk toffee as we dug out chunks with blubber hooks, hacked at it with sealing knives, and piled it into a large two-handled basket. We staggered with the basket two hundred yards to the spans where we went along throwing each dog about six pounds of meat. As there were seventy-five huskies, we had to return several times to the frozen pile to replenish the basket.

As the wind gusted in furious whipping slashes, we had difficulty in keeping our feet. I thought of what had happened to Tait, and of what to expect if I were blown down into the sea, where the waves were grinding the growlers against the sharp rocks. I clung on to my side of the basket for all I was worth.

Feeding the dogs took about three-quarters of an hour, and we returned to the hut with hands and faces frost-bitten. When I came to know huskies better I realized that it had not been necessary to feed ours that time. They have a wolf strain and can go for long periods without food. To get the most out of their food they will swallow what they excrete to pass it again and again through the digestive process. I suspect Turner and

Clarke took me out that night just to give "the new boy" his first taste of an Antarctic blizzard!

The wind blew all night, moaning outside the hut and wrenching at the roof. We were safe inside, but on board the *John Biscoe* they were having an anxious time as she lay at anchor, steaming gently into her cables to ease the strain. In that position she was at her most vulnerable and the Bay had a bad reputation for icebergs. I have seen bergs as big as the Albert Hall above water sweep in from the Antarctic Sound, circle the bay at four or five knots, and continue out to sea again.

The *Eagle* had had a narrow escape in 1945 when she brought in personnel of Operation Tabarin to build the first British hut in Hope Bay. Men were ashore working on the hut when the blizzard started. On the bridge of the ship were Captain Sheppard, the master, and Tom Carrell, the bos'n. Suddenly they saw the titanic mass of iceberg as big as a house bearing down upon them out of the mists of driving snow. They could do nothing. There was no time to weigh anchor and they could not sheer out of the way. A collision seemed inevitable.

The old wooden *Eagle* had a long bowsprit extending from her clipper-shaped bow. The tip was barely a few feet away from the iceberg, and for a moment it seemed about to pierce the white flesh of the monster like a lance. Then, as if miraculously, the berg's relentless progress was halted. Probably some part of its submerged bulk had run aground, because it paused and its immense shape began to move round to starboard. Captain Sheppard saw his chance and swung his wheel hard a'port. The ship turned away, and the berg slipped casually along the length of her side just a couple of feet clear.

The gale was still blowing when the duty cook roused me with a mug of steaming tea at eight next morning. It continued to blow hard all day. In the evening it dropped to around thirty knots, and Captain Johnston put a boat ashore with our wire-

less operator, John Barber, who had been marooned on board. He said the Captain had decided to leave.

We had just seen the boat hoisted aboard, when with a couple of hoots of her siren the *John Biscoe* turned and sailed out of the bay to continue her round of the bases—first Base B, Deception Island, where four years ago we got tough with the Argentines, who insisted on building a hut on the airstrip, and a detachment of Royal Marines was sent to deport them as illegal immigrants; next to Anvers Island, where a party of five men were to go ashore to reconnoitre a site for the new Base N; on to Base A, Port Lockroy, the ionospheric research radio-control centre for the bases, through which all messages were routed; then Base F, Argentine Islands, the geophysical research centre; and, finally, Base H at Signy in the South Orkneys, the most northerly base and an ornithologist's paradise in the summer, where much original work has been done on the study of penguins and seals.

In close wireless contact with the *John Biscoe*, we followed her progress through the ice with some anxiety. On her approach to the Argentine Islands she was beset, and reports came through of games of football played on the surrounding ice. For ten days she was unable to move out of the firm grip of the frozen pack, and members of the base visited the ship on skis. Eventually, however, the ice began to open up, and the *John Biscoe* was able to get near enough to effect a relief.

At Hope Bay we continued sledging our supplies from the ice-foot to the hut, and I took an active part in this job for practice in handling dogs.

I remember my first experience with them when Clarke offered to show me the ropes. He was a small, slightly built Australian—lighter than Ben, one of our bigger huskies. He was a King's Scout with two Antarctic seasons behind him, and I felt as he took out a sledge with dog harnesses and equipment that I could not have had a better instructor. Together we pushed the

sledge to the spans, and he showed me how to anchor it with a rope to a flat, fluted steel picket driven into the ice with a three-pound hammer. He showed me how to hook a rope sixty-two feet long, known as the main trace, to the middle of another rope which is taken on either side above the runners of the sledge, looped round each of the bridge pillars and fastened to the base of the handle-bars at the back.

He picketed down the front of the main trace so that the sledge faced in the direction of Mount Flora. He explained: "If those bastards do manage to get away before we're ready they'll soon tire themselves out on the steep slope."

We put on a dog-team, the Gangsters,¹ with each husky squirming with excitement as it was fitted into its lampwick harness.

Clarke also taught me the four Eskimo words of command to which the dogs responded: *Huit*, meaning "Up dogs and off" or "Pull hard"; *arr*, for "Stop" or "Calm down"; *irra* for "Bear left"; and *auk*, for "Bear right."

I repeated them.

"That's fine," Clarke said. "Now take up the pickets and let's go."

I pulled the two pickets out of the ice and put them in the sledge-bag on the handle-bars.

"*Huit*," Clarke shouted, gripping the handle-bars. The dogs strained to move forward, but Clarke's foot was on the brake pedal under which long steel spikes stuck into the snow to create a resistance. "*Irre, Irre!*" and the leader came round in a wheeling movement. Then Clarke took his foot off the brake, shouting, "*Huit, huit!*" and the team was off down the broad snow-filled gully between two rock outcrops.

Summer melt-streams ran down the gully, which was slushy in parts and covered with a peculiar green slime formed from microscopic algæ. We could smell the rookery 150 yards away

¹ The other teams were "The Admirals," who went to Anvers Island with Hooper; "The Players," "The Gentlemen," "The Number Ones," "The Churchmen," who were sent to Horseshoe Island with Vine-Lott, and "The Gods," a young team formed at the end of the year.

to the left, glistening with slippery pink droppings from the penguins' diet of krill. We were executing what Clarke called a "controlled descent."

"You want to keep 'pumping' the brake," he was saying, as he stepped on it at intervals.

"Arr, arr!" he called when we got about fifty yards down the slope. "Arr, you bastards! Pundit, you bloody fool!"

Clarke's "pumping" of the brake did not appear to be making much impression, because the speed of the sledge was rapidly increasing, and the leader, Pundit, was heading dangerously close to the edge of the rock outcrop on the right. Clarke tried desperately to jerk the sledge clear, but one of the runners struck a rock, the sledge was thrown on its side and Clarke landed in the slush. He got up cursing the team that by now was tearing down the snow slope in pursuit of a couple of penguins who had strayed from the rookery.

If this was the sort of thing that happened after two years' experience of handling dogs, I wondered how long it was going to take me to manage them. However, by the end of the day I had learnt my *irra* from my *auk*, and was delighted to find I could drive the team from the hut to the icefoot, halt it, load the sledge and drive back. So I was a little disheartened that evening when somebody suggested that I had not been driving the dogs—they had been driving me.

"They already know that route like a milkman's dray," he added. In the next few days I began to understand something about huskies. I realized that they are more brawn than brain, and that in some circumstances not even the most experienced drivers can control them. I learned that if the foot brake is ineffective, the only means of stopping a runaway team is by capsizing the sledge and digging the handle-bars in the snow. For ensuring a "controlled descent" down a steep slope there is a rope brake—a short, thick length of rope looped to a toggle on one side of the sledge, passed under both runners and looped to another toggle on the other side. The rope creates a resistance

against the surface of the snow, and the dogs have to pull hard to move the sledge.

Huskies, I discovered, are quite unpredictable. They might work conscientiously for hours and suddenly spot a penguin and tear off after it. Instead of retreating at speed by tobogganing down the snow-slope on its belly, the stupid bird would stand its ground. The team would pile on and it would be killed or maimed. To try to prevent this, we used to halt the team when we saw a penguin, and one of us would go ahead and boot it well out of the way. Penguins are tough creatures. You can't hurt one by kicking it with a snow-boot.

We had a spell of warm weather, when the snow-slope became very slushy and impossible for sledging. We took to moving the stores by night when the temperature fell and the snow surface froze hard enough to prevent the sledge-runners from sinking.

I enjoyed night sledging. Usually the man on night met. duty and one other worked with a dog team from 11 p.m. to 6 a.m., moving possibly a ton and a half of supplies in that time. There was a wonderful tranquillity about these Antarctic nights, with a translucent sky reflecting the light which was just over the rim of the world so that it was possible to see for twenty miles.

As the sun came up behind Joinville Island, the bay would be bathed in a blood-red glow. The colour would spread, and for about ten minutes the white world of Antarctica was stained a gorgeous pink. The sun stepping up higher would begin to cast long purple shadows behind the ridges and bumps and the pink would fade, till it lingered only near the etched profile of the hills and mountains behind us.

We had little time off while there were still supplies to be brought to the security of the hut or the emergency store a little way up from it, but one fine evening I went to visit the graves of Oliver Burd and Michael Green, who had lost their lives when the British base hut caught fire in 1948. One of the crosses had been blown down by the wind, and we had brought another from Port Stanley to replace it.

I had heard the story of the tragedy from Dr. William Sladen, who was the only other man at the base besides Burd and Green—Elliott, then base leader, and the others were out on a survey journey in the Crown Prince Gustav Channel. Fortunately for Sladen, he had decided to spend that particular night in November in a tent at the rookery—he was making a study of penguins and wanted to observe their behaviour early in the morning.

He was suddenly wakened during the night with a feeling of dread. He got up and looked out of his tent, and was horrified to see the hut burning. In desperation he ran, stumbling through the soft snow, afraid that Burd and Green might be inside. The creosoted timbers burned quickly, and by the time he reached it the hut was a mass of flames. Burd and Green were nowhere to be seen. Sladen tried to get inside the hut, only to be driven back by the intense heat.

For hours he watched the blaze, sick with misery and a sense of his own helplessness. When the fire burnt itself out and he was able to get into their ruined home, he found the charred bodies of his friends.

He returned to his tent at the rookery and tried to contact Elliott with his portable radio transmitter, but the cold had made the batteries too weak and he could not get through.

Elliott himself had become anxious when he stopped receiving wireless messages from base. His fears mounted when he heard the other bases trying to call Hope Bay and receiving no reply, so he decided that they should all return to investigate. The journey took several days; when eventually they reached Summit Pass, after travelling nearly forty miles since morning, they found a depot flag with a message from Sladen to prepare them for the shock. Fortunately, the hut containing the emergency supplies was undamaged, so there was sufficient food and fuel to keep the base going until the relief ship managed to get through.

The cause of the fire will never be known. One theory is that it started in the engine-room which housed a petrol-driven

generator. As this was near the front door the fire would have prevented the two men from getting out that way; it is thought that retreat through the back door was cut off because of ice and drift snow that was piled up outside, blocking the way out.

All that now remained of the hut were a few blackened up-rights sticking above the snow. They served as reminder that fire is an ever-present danger as well as the worst disaster that can befall a base in the Antarctic.

I turned and walked away from the site, past the survey pillar to the ruin of a little stone hut that stood fifty yards beyond. If the burnt-out British base was a warning, these pathetic stone walls were also an inspiration. It was here that three Swedes from Nordenskjöld's expedition, Andersson, Duse and Grunden, spent a winter in 1902. The previous season, Nordenskjöld with a party of scientists had landed at Snow Hill, an island off the east coast of Graham Land, intending to winter there. The expedition ship, the *Antarctic*, then left them. When she returned the following summer to pick them up the seas round Snow Hill were frozen and she could not reach the party.

The *Antarctic* then sailed round to Hope Bay, and Andersson and his two companions landed, intending to try to get to Snow Hill on foot, man-hauling a sledge loaded with their tent and supplies. It was an extremely courageous undertaking, as they possessed no accurate maps. It was an even chance that they would never make it.

They set out from Hope Bay, climbing up over Summit Pass, and down into the bay which Duse himself called the Bay of a Thousand Icebergs and was later named Duse Bay after him. They reached Vega Island and traversed it, but on the other side the way was blocked by open water in what is now called Sidney Herbert Sound.

There was no other alternative but to return to Hope Bay and wait to be picked up by the *Antarctic*. Her master, Captain C. A. Larsen, had promised to return not later than March 10.

As winter closed in and the sea froze, their hopes of seeing the *Antarctic* faded. Only one possible explanation for Larsen's

failure to return seemed to be that the ship had been caught in the ice and crushed in another attempt to reach Nordenskjöld.

Andersson, Duse and Grunden prepared to winter in Hope Bay, building the stone hut as an outer shelter for their tent which was now wearing pitifully thin. In it they lived through the frightful winter, with the thermometer inside the tent frequently registering forty degrees of frost. Food ran low, and they lived on penguins and seals they had luckily killed before winter came. Seal blubber was their fuel, and their only luxury a small tot of Hollands which they allowed themselves on the first Sunday of each month, and on Mid-winter Day, June 21.

Now, fifty-three years later, all that was left of the hut were the four walls with an entrance and the hole in the wall which served as a window. The walls were three feet thick, built of rocks piled on top of each other, the holes plugged with smaller ones.

Knowing the story of the heroic struggle for survival, I entered the hut with a feeling of awe. I looked for, but did not find, the mark the Swedes had put on one of the walls to indicate the bottle they had left containing an account of the *Antarctica's* plans and where they themselves had gone.

They had set out in October to try to reach Snow Hill again. The journey was an ordeal in which they nearly lost their lives on several occasions by falling through the sea ice. Exhausted and frost-bitten, they had reached Eagle Island, and on October 12 they were making their way across a cape, later named Well Met, when they saw in the distance ahead of them what they thought were seals.

As they came nearer, they realized that the dark shapes were not seals but men, and none other than Nordenskjöld and a companion, who were surveying the island. Nordenskjöld, too, had thought the figures he saw were seals, and his dogs suddenly started to bolt towards them as they approached, like wild men in filthy clothes, with long hair and beards, faces blackened with soot, and wearing home-made visors with slits

to prevent snow blindness. Nordenskjöld did not recognize them until they spoke to him.

Meanwhile, the *Antarctic* had sunk, as they believed, with her side stove in by pressure of the ice, and the crew after great hardship had reached Paulet Island, where they wintered in a small hut. As soon as the sea began to break up with the approach of summer, Larsen and five men left in a rowing-boat for Hope Bay. They reached it, missing Andersson's party by just a few days, but found the bottle with the message and set out themselves for Snow Hill. They rowed back round the Tabarin Peninsula and down through the treacherous pack-ice of the Crown Prince Gustav Channel. Eventually, after an heroic voyage in which they suffered greatly, they arrived at their destination to find not only that Andersson, Duse and Grunden were safe, but that an Argentine ship, the *Uruguay*, had come to rescue all of them.

It made me a little sad that the Argentines had littered the area round the stone hut with empty oil-drums and packing-cases. The hut was the only relic that remained of that epic of guts and determination, and I felt it should be treated with respect. The men who had lived in it had set a standard for us to follow. Incredible as it may seem, Andersson had collected geological specimens on the journey to Snow Hill. In his despair and acute physical distress, he had conscientiously fulfilled the duty to which he was dedicated.

I resolved also to try to make some contribution to the Antarctic; to add some little speck of knowledge whether it appeared to be useful or not. "It is of no purpose to discuss the use of knowledge," Nansen wrote. "Man wants to know, and when he ceases to do so, he is no longer man."

I walked back up the snow-slope to our base hut, where Turner was detailing a couple of men for the night's sledging. I suddenly felt impatient for him and the remainder of his party to go. I had particularly asked the Governor to complete the re-

lief of the base on the return call of the *John Biscoe* as I would rather run the base under-staffed than have people hanging on who had done their job and had nothing to look forward to but the prospect of returning home.

My personal feelings were those of any new man taking charge of an established organization and finding many things he would have liked done differently. But I could not very well act before the old guard moved out. I realized, too, that many of my ideas would be resisted.

Everybody at Hope Bay had learnt his job from somebody who had done it before him, and there appeared to be a fixed idea that there was only one correct way of doing anything in the Antarctic. To suggest an alternative immediately begged the question: "But, old boy, would Bingham have acted thus?"

Bingham was an admirable man, but what I could not understand was how he had come to be regarded as the only "expert" on the Antarctic.

He had developed a good deal of the technique of travel and survival in sub-zero temperatures that we now practised, yet he was only feeling his way at a time when relatively little was known. I felt we should go on trying new methods. I was out to learn all I could from the old hands, but not prepared to accept anything without question simply because someone else had laid it down.

Eventually, after two weeks, the *John Biscoe* returned to Hope Bay, and I signed for Base D and officially took over from Turner.

Most of the day was spent in feverish packing by the four outgoing men, who were still unprepared though they had been waiting months for this moment. The atmosphere in the hut was not unlike the last day of term at school, with up-turned mattresses revealing articles mislaid earlier in the season; overflowing cases that would not shut; surplus articles of kit being given away; addresses being exchanged.

Those of us who were staying looked on these preparations with a slight feeling of envy. There were regrets in parting

from friends, and pathos when Ian Clarke went to the spans to say good-bye to the dogs and returned with tears in his eyes.

Now that Turner, Clarke, Brookfield and Mottershead were going, they were the best chaps in the world. With heavy hearts we all said good-bye, and waved as they tramped down the snow-slope to the embarkation point. We saw them climb aboard the *John Biscoe's* motor-boat with their luggage, and the craft swung out and headed for the ship.

It was late in the evening, with the sun low over Sheppard Point. We heard the sound of the *John Biscoe's* windlass and saw her anchors come up. She began moving in a half-circle and, as she turned, she dipped her ensign and sounded her siren. I lowered our Union Jack, returning the salute, and stood near the flagpole at the corner of the hut, watching the tough little ship sail away.

After a while we drifted back inside the hut, and saw the empty bunks and missed the men who had occupied them. They had contributed to the character and spirit of the place, and now there was a void. Others had taken their place, but somehow it was not quite the same.

Chapter Five

I WAS now in command of Base D and intensely proud of it. I shall never forget the thrill I had the first day I walked up the snow slope to the long, low, wooden hut with its timbers freshly creosoted and its window-frames picked out in white. The sunlight was dazzling and the hut sat like a large black coal in the painful whiteness of the snow.

In London I had seen the special design which made it suitable for the intense cold and very high winds of the Antarctic. I knew that it measured eighty-six feet six inches long by twenty-seven feet ten inches wide, that it was constructed of two thicknesses of tongue-and-groove pine planking, with two inner linings of tarred paper, and an insulating space between of five inches. I knew that the roof was covered with rubberoid felt battened down every few feet to prevent the wind getting underneath and ripping it off, and that for additional security the whole structure was held by a series of steel stays to concrete blocks parallel to the front and back walls.

These details on paper had not conveyed anything of the hut's self-sufficiency or the exciting opportunities it offered.

The entrances were at either end. At the east end the door was at the back of the hut, and I remember that day stepping into a narrow room that suddenly evoked the atmosphere of all the books I had ever read on polar exploration. On the wall to the right of the door hung dog harness, lash lines, main traces, climbing ropes, ice-axes. On racks against the opposite wall were skis with ski-sticks hanging beside them. Farther along the wall were pyramid tents in their canvas bags, Primus stoves, sledge compasses, candles, boxes of matches, "pots and pans," boxes, alarm clocks. On the far wall were racks packed with such items as crampons, sledging spares, ski-skins, pickets and picket hammers, rope brakes and sledging-bags. Everything

had a look of business-like utility, and the very sight of it was stimulating.

This was the sledge workshop, and a door in the left wall led into a short passage where the base anaraks hung from pegs on the wall. The anaraks were common property. In foul weather you pulled one over your clothes before going outside for any of the hundred and one base chores. They were stained with seal's blood and blubber, and smelt of a sickly sweet mixture of cod-liver oil and rotten flesh. On the floor in one corner was a bucket known as the "Tottenham Court Road Gents."

The inner door opened into the main workshop, with a work bench under the window and every tool imaginable hanging from hooks and in racks. Through a door on the left and tucked against the passage, between the workshop and the sledge workshop, was the bathroom with a tub made by Tait out of a diesel oil-drum split in half with the two ends riveted together.

When his turn came every new-comer would give himself the luxury of a really deep hot bath. The snag was that next morning he had to empty the bath with a bucket, throwing the water well clear of the hut since it immediately froze into slippery sheets of ice. We did not have the refinement of a waste-water pipe, because they do not work in the Antarctic. The Argentines found that out for themselves when they built their hut with all modern conveniences. They flushed their lavatory once. The water froze before it reached the end of the waste pipe, and it has remained so ever since.

Another job for the bather of the night before was to go outside with a hand-saw and cut blocks of snow to replace the water used. This, and emptying the bath, had to be done fair weather or foul, and we soon learned to bathe in the minimum amount of water.

Some of us even became what might be called "cuckoo" bathers, getting into a bath after a man had left it. Officially, "cuckoos" did not have the emptying fatigue, but morally they were expected to help. However, when there happened to be more than one "cuckoo," and I have known as many as four

using the same water, one after another, they would all manage to sidle their way out of helping. Then next morning the rightful bather would find himself having to empty not only his own bath but the extra water added by the "cuckoos."

We took turns to bathe according to a strict roster and, since there were twelve of us, a man's bath-night became a minor highlight, with the added luxury of clean pyjamas and sheets. He bathed and did his laundry in "Georgina," the Hoover washing-machine that had been bought the year before and paid for by the base. A man's bath-night was sacrosanct, and only the return of a sledging party, who naturally had priority, could deprive him of his right to a bath.

The dogs howling on the spans gave the first warning of the return of a party, and everybody at the base would be glad to see them again—everybody, that is, except the man who had been stoking the anthracite boiler all day for his bath.

Opposite the main workshop on the north side of the hut was the engine-room, with the diesel charging plant to supply the power for the hut. This was the special province of Derek Clarke, who also serviced the dinghy outboard motors stored in one corner of the room. Also in the engine-room was the bank of twelve-volt accumulators which were kept charged and used for lighting when the engines were stopped at eleven o'clock every night.

Next door was the survey office, with its walls and even the ceiling covered with maps. Here at the drawing-board under the window the two surveyors, Kenney and Leppard, spent most of their time while at the base working at their precise and meticulous drawings. At times when they were computing their results on an adding machine, they sounded like a couple of demented shop assistants banging out a cacophony on a cash register.

Across the passage from the survey office was the domain of Julian Taylor, the dog physiologist. It was a laboratory in which "Julie" carried out his research on huskies, dissecting old dogs that had been destroyed, to separate and weigh the muscle

and work out its power ratio. Some of his experiments, like that of finding out the amount of energy extracted by a dog's digestive process when it was fed on pemmican,¹ were not popular as they stank out the entire hut. In the laboratory Taylor kept the record cards giving each dog's pedigree and history, and on one wall was a chart showing the "bogey" for the growth of pups, so that we could tell by regular weighing how they were progressing.

Leading off this room and separated by a curtain was the medical officer's small surgery, complete with medical books, instruments, and the medical record of every F.I.D.S. man in the Antarctic. Paul Massey's practice extended to all the bases, and he could call them up by radio from time to time to check on the health of his distant panel patients.

If one was ill, he made an examination through a third party who would take the temperature and pulse and then administer the treatment prescribed. Occasionally, when he wanted a second opinion, Massey consulted the senior medical officer in Port Stanley, who would come to the met. station, and the case would be discussed over the wireless, but when the matter was of a confidential nature, the messages would have to be passed in code.

The Antarctic was too frustratingly healthy for an enthusiastic young doctor like Massey. He had only two cases at Hope Bay—when Alan Precious got a touch of stomach trouble and I dislocated a shoulder falling off a sledge. We both agreed that his bedside manner could have been a model for a Harley Street specialist visiting a dowager marchioness.

However, he was not so gentle in his surgery, which I personally could never enter without feeling I was in a headmaster's study and conscious of his cane in the corner. Massey's particular instrument of corporal punishment was a home-made wind tunnel into which he would thrust each man's left index finger and subject it to intense cold for five or six minutes.

He then took the temperature of the finger, and proceeded to

¹ Compressed dehydrated beef with certain vitamins added.

measure its return to normal sensitivity with a divided ruler. This consisted of two school rulers joined together at one end and separated at the other by a gap of one inch, and Massey would move the victim's finger up and down until he could say exactly where he first felt the gap. As it began to thaw out, the finger would throb with pain.

This torture formed part of the research into cold acclimatization. The first time I had been subjected to it was at Cambridge, shortly before we left for the Antarctic. My finger then registered no gap at all, but the more I got used to the cold the narrower became the gap that I could feel between the rulers. We called it "suffering for science," and although none of us actually objected, we all complained loudly enough to make it very embarrassing for poor Massey to have to ask each one individually to co-operate. We were not supposed to smoke for an hour before the test, and to give Massey his due he would abstain from smoking himself to share in the general discomfort.

Our ward room, which was next door to the surgery, was a combined bed-sitter and the largest single room of the hut. The bunks were ranged along the walls, with partitions between serving as headboards, chintz curtains under the bunks to conceal a mass of personal gear stored on the floor, a reading-lamp above each pillow, and shelves fitted to the headboards and along the wall.

The lampshades were home-made. In most cases they were the handiwork of the man who occupied the bunk and impressed the stamp of his own personality upon it. While everything else at base was communal and privacy impossible, the few square feet of his bunk were a man's preserve, where on the shelves and walls he reproduced in miniature the effect you might expect to find in his own home.

The first bunk on the left, as you entered, belonged to Alan Precious, a tall, slim Yorkshireman, with dark wavy hair, a curly beard, and kind blue eyes, so gentle in his manner that

I would often feel noisy and brusque by comparison. He was patient and peace-loving, and was never heard to say an unkind word about anyone. On his shelves were works of exploration and philosophy, a book of English quotations and usages, and an anthology of poetry. On the wall above his bunk were two pictures, a small print of a Van Gogh and a photograph of Sir Edmund Hillary.

The next bunk to Precious, going in an anti-clockwise direction, belonged to Murdo "Jock" Tait, who possessed one book, the selected poems and writings of Robert Service, from which he would often quote. To Tait his bunk was just somewhere to sleep, and he spent more time sleeping than any other man at base.

The rule was that we all had to be up, dressed and ready for our duties by nine every morning, except Sundays, when we could stay in bed as long as we liked. Tait would invariably be the last out of bed, and trying to catch him breaking the rule became a kind of game between us. One morning I saw him asleep at six minutes to nine, and I felt I had got him at last. I had to go out of the room for a short while but, when I returned, he was dressed, and his bed made with a minute to spare.

He was thirty-two, an ex-lighthouse keeper from the north of Scotland, of medium height, muscular but lean, with a narrow, cadaverous face, and a beard that even at its best looked as if the moths had got at it. He was imperturbable, a quality which at first I mistook for lack of enthusiasm, but later came to appreciate as a very quiet, efficient manner. I am grateful for Tait's imperturbability, which undoubtedly saved my life on two occasions on the main survey journey later in the year.

He was a competent handyman, and inspired when it came to constructing rude mechanical devices which we sent to the other bases. His hobby was making rugs with complicated designs of ships, and we used to tease him, saying they must be for his bottom drawer—he was engaged to be married to Sally

Bernstein, a school-mistress in Port Stanley, whose framed photograph smiled down at him from his shelf.

His neighbour was Ron Worswick, a gentle, jovial giant, who stood six feet seven inches in his socks, and wore a black beard after the style of Dr. W. G. Grace. He was one of the strongest men I have ever met. I had heard that, while he was in Port Stanley on his way down to the Antarctic, he had bent a steel HALT sign in two with his bare hands for a bet, but I did not quite believe it until the day he arrived aboard the *Norsel*. We were sending a dog team on to one of the other bases, and I was having difficulty in controlling one of our hundred-pound huskies as it tugged on its chain on the way down to the ship. I heard a voice behind me, and looked round to see Worswick walking casually with a husky tucked under each arm, talking to them as they tried to lick his face.

He had already spent two seasons in the Antarctic, at Signy, and as base leader at Admiralty Bay, but seeing us off on the *John Biscoe* at Southampton was apparently too much for him. He longed for the Antarctic again, and went straight back to London, signed on for yet another season and came down on the next ship.

Don Willis, or "Slim" as he was known, was tall and, as his nickname suggests, slender. He was a good-looking Londoner, possessed of a magnificent black curly beard when he cared to grow it. The day I was interviewed by the F.I.D.S. selection board I had asked if there was room for another wireless operator, and mentioned Willis, who had been with me in Korea but unlike myself was still a regular soldier.

Green said they would be glad to consider Willis if I could get hold of him, so I rang the War Office to be told he was in a unit in Warminster. I telephoned the unit and learned that Lance-Corporal Willis was on guard duty. After a while he came to the telephone. I said, "providing I can fix it, how would you like to come with me to the Antarctic for a couple of years?"

"If you can fix it I'll come with you, but you'll have to square it first with the wife," he said eagerly.

I was very touched by Willis's enthusiasm, and although there were occasions when he may have regretted his decision to come to the Antarctic, his unselfish loyalty to me remains among the most lasting memories of my tour.

It cost Willis £80 that he could ill afford to buy himself out of the Army, and although he was not able to join me on the *John Biscoe*, he followed aboard the *Norsel* with Worswick and Mander.

Willis took over as wireless operator from John Barber, and was certainly one of the hardest-worked men at base, with radio "skeds" that kept him on duty from 8.30 to 11 a.m., 2.30 to 3.30 p.m., and 6.30 to 9.30 p.m., every day, apart from his normal base chores, which he had to do the same as anyone else. Fortunately, Mander and Lewis were also operators, otherwise Willis would never have had a day off. By listening-in to conversations between the other bases he kept us well informed of all the gossip in our world beyond the world.

Derek Clarke, whose bunk adjoined Willis's at right angles in the south-west corner of the room, was the diesel mechanic. He had been in the R.A.F. in the Canal Zone before it was evacuated, and had joined F.I.D.S. on his return to England. He had already done a season at one of the other bases, and now had returned to the Antarctic for a second tour after spending some time at Home. He was aboard the *John Biscoe* on the voyage out, though I don't remember noticing him particularly; he was quiet, shy, retiring, gentle, yet with a good sense of humour and a strong determination which I later came to appreciate.

His second function at base was the care of the maternity department. Ten days before a bitch was due to pup, Clarke took her off the spans and gave her a special diet of the best cuts of seal, with plenty of tinned milk and cod-liver oil. When her time came, she was put in one of the kennels which had been

built on at the end of the hut, so that she could have her litter in undisturbed comfort.

For the first six months of their lives the pups were treated like babies by Clarke, who gave them carefully regulated meals and checked their weight against the progress chart. At first they were allowed to run free so that they could develop and gain confidence before being put on the spans. Occasionally a pup would be missing, and Clarke, like a good shepherd, would wander among the rocks and creeks of the bay, searching the tide crack¹ and peering into crevasses until he found it. His vigilance saved at least two pups who had gone off chasing penguins and got lost. On each occasion he found the pup in a part of the tide crack where it had fallen in but could not get out.

None of the bunks was more characteristic of the man who occupied it than the next, that of Dick Kenney. It was always as neatly made as a hospital bed, and hardly ever looked disturbed even when he slept in it. Every night he would carefully crawl in between the sheets, which were tucked in on either side, as if he were entering a sleeping-bag. He would lie on his back with his feet outstretched, the thin shape of his body barely noticeable under the bedclothes. He would sleep without appearing to move, but grinding his teeth vigorously throughout the night.

Next morning he would wake up promptly at eight o'clock, and begin the day with a pattern of actions which rarely varied. First he ate a piece of chocolate while reading a chapter of a book. Then he eased himself out of the bunk as carefully as he got in. He shaved, washed, dressed and finally "made" his bed by smoothing out the rucks and giving it a few tucks and pats. In the same way Kenney was meticulous, exact and regulated in everything else he did.

He was so slight we used to think he was the smallest man on the base, until one day Massey decided to measure us all in

¹ A fissure at the edge of the icefoot, where it joins ice affected by the rise and fall of tides.

the cause of science, and at five feet ten inches Kenney was found to be half an inch taller than me. I thus acquired the status of the smallest man at base, which Kenney, who now called me "Wee Willie," never let me live down.

Kenney was a tease, with a caustic wit that sometimes struck home unmercifully; once he even managed to ruffle calm Alan Precious, who was duty cook at the time. For an ill-timed remark about Alan's cooking Kenney collected a recently made birthday cake full in the face.

One night we made a recording of his nocturnal teeth grinding and played it back to him at full volume. It sounded like the sound track of a space film during a scene when two planets collide, and we hoped it would spoil his sleep, as he was sensitive to noise. On the contrary, it made no impression. Kenney went on sleeping soundly and giving his grating, off-key performance in the weird nightly chorus of the ward room.

One night, I remember coming in from the met. office at about 2 a.m. to check the fire, a routine job for the night duty met. man. Besides Kenney, who was at his loudest, Tait was chanting some wild Highland lament, Willis and Lewis seemed to be carrying on a conversation in gibberish, and Taylor was muttering and grumbling.

Kenney's work was his first love, with an appreciation of classical music a close second. He had been a chorister at Wells Cathedral, where his father was Vicar Choral, and had a collection of records which he would play and listen to with rapt attention. His other curiously assorted interests were reflected in the pictures round his bunk. One was a plan of caves near his home at Wells which he had helped to explore. Another was a photograph of his A.J.S. motor-cycle. The third was a nude he had inherited from the bunk's previous occupier. The pin-up was placed for convenient viewing on the underside of the shelf above his pillow, but I doubt if Kenney ever noticed it before it was pointed out to him.

Kenney hated huskies. Rather than drive a sledge on his survey journeys, he taught himself to ski really well, and would

go off with his plane table and other equipment strapped to his back.

While he worked on a large-scale survey of Hope Bay and its immediate area, Norman Leppard, who occupied the next bunk, carried out the long-range survey work on the journeys down the east coast of Graham Land.

Leppard was a very tall, strapping young extrovert with a bright red beard. He had been a Sea Scout, and above his bunk there was a picture of the boat his troop used. He was one of those people who hates throwing anything away. He was in charge of the sledge workshop, and would clutter up the place with odd pieces of sledge, nuts, bolts, bits of brass and rope. When the big thaw came he used to spend hours digging among the ice and debris of the burnt-out hut and return laden with treasures. I remember using one of them for firewood. It was a broken and quite useless sledge runner, but he was really miserable about it and hardly spoke to me for two days.

His next bunk neighbour was Philip Mander, otherwise known as "Wink." Mander, who was twenty-four, had a gift for mimicry and performed the rôle of resident comedian. In Monte Video he had acquired a book of glossy "art" photographs which he cut out and pinned up on the walls round his bunk. One in particular attracted so much attention that he found his rest continually disturbed by groups of people gathering round to admire it. In desperation Mander photographed the picture, made eleven enlargements, and distributed them among the rest of us in the hope that he would then be left in peace.

The next bunk to his was Julian Taylor's, who had quite recently come down from Cambridge, where he distinguished himself with a brilliant academic record. He was twenty-six, of medium height, good-looking and physically very tough. He had been with Peter Scott in Iceland, where he had done excellent work on the migration of pink-footed geese, and was now in his second year at Hope Bay. He had been at Oundle and Cambridge with Paul Massey, whose bunk was next to his.

Massey was a year older than Taylor, very tall and well-

made, a Cambridge Blue who had rowed for England in two Olympiads. He was my deputy, and although at the beginning we did not exactly see eye to eye on some things, we later became very good friends. When I look back on our life and achievements in the Antarctic, I realize how much I owe to Massey.

The eleventh bunk, or "pit" as they were known, belonged to Joe Lewis, and was quite the most untidy of the base. Lewis at twenty-four had spent three seasons in the Antarctic, and was now in his fourth. Conscientious and hard-working, he could turn his hand to almost anything from plumbing and carpentry to operating the wireless set. For the first six months of the season he took over the duties of "senior met." in charge of the four others, who kept a continuous record of weather conditions in Hope Bay.

While I was actually in overall charge and responsible to the Chief Meteorological Officer in Port Stanley, Lewis in his turn was responsible to me for the efficient running of our station. He co-operated with me from the start, particularly when I suggested that we should increase the number of balloons sent up in the season.

A balloon ascent observation was a bitterly cold and uncomfortable business that usually took about two hours. It meant that a man had to go down to the small balloon hut a hundred yards from base, charge the balloon with the right amount of hydrogen, attach a tail consisting of a silver and red square of paper and let it go. Then he stood on a platform, with his head out of a hatch in the roof of the hut, following the course of the balloon through a theodolite, and reporting its position every half-minute by telephone to another man recording the observations in the comfort of the met. office.

By this means it was possible to record the speed and direction of the wind at different heights above ground level, though the success of a balloon ascent was very often a matter of luck. A balloon might be carried rapidly over the hills behind the bay and be lost to view, or it could burst after a couple of hundred

feet or disappear into a cloud; then all the work and preparation would be wasted. Still, we had a high percentage of successful ascents, with a few balloons followed as high as 70,000 feet. At the end of the season we were justly proud of our record of 250 balloons sent up.

Finally, there was my bunk in the north-east corner of the room, with a collection of books I had brought all the way from England and never got round to reading. A couple of suits of civilian clothes hung on coat-hangers from nails in the wall. One was my dinner jacket which attracted the attention of an American journalist, who arrived on one of the Argentine relief ships and climbed the hill to our hut in search of a "story."

"Say," he asked me, "is that a tuxedo?"

"Yes, of course," I said. "You must realize that we always dress for dinner, even in this outpost of the Empire. After all, we *are* British, you know," I added solemnly.

He immediately put it down in his notebook, and I had visions of an article appearing in America that far surpassed my "Bible" story in England.

The ward room was our home, and each of us had to live in it with his eleven companions whether he got on with them or not. I had been told so much about maintaining morale at base that, once we were all settled down after the *John Biscoe* had left, I talked to the others about some of the points I thought were necessary to make life pleasant for everybody.

I suggested that if we were to remember we were each a guest as well as a host, our stay would be a happy one. It was up to us all to make a positive effort to be as considerate as possible, to learn to be tolerant of our companions and amused rather than irritated by another man's idiosyncrasies. Otherwise in the closed circuit of the hut life would be unbearable. One man could make the Antarctic a hell for the rest of us.

The ward room is more clearly detailed in my memory than any other scene in the Antarctic. I see an austere room with little or no colour. Brown linoleum covered the floor, in the

centre of which was an anthracite stove with its flue, and unfortunately most of its heat, going up through the ceiling. A dining-table was to one side. Twelve tubular chairs with hard wooden seats were either ranged round the table or grouped round the stove. A picture of the Queen was on one wall, and a water-colour painting of our hut on the opposite wall. There were few amenities apart from a shelf of books, a dart-board, cards, draughts, chess, Kenney's records and record player, and a dark-room, like a large cupboard, on the left as you entered.

Though my tour in the Antarctic was crowded with incident, and I was away from base for months on sledging journeys, it is the picture of this ward room that comes to my mind most clearly when I think of that period, with its atmosphere created out of the personalities who lived in it so intensely, against a continuous and monotonous background of howling wind.

Through some benign alchemy of nature only happy memories recur, yet the ward room is also associated with homesickness and depression, when a cable did not come for weeks, and sometimes an utter loneliness and terrible longing.

At the outset, there was my uncertainty. Perhaps I was trying too hard to be the leader rather than the commander, at the same time very conscious of my lack of experience and over-impatient to prove myself.

There were times when I asked myself what I would do if the worst came to the worst and someone got "Bolshie" and wanted a showdown. Well, with Port Stanley too far away for the correct disciplinary action to be useful or even the best course in the circumstances, I was quite prepared to resort to any methods to gain a quick decision. Besides, there were plenty of blunt instruments about, and to hell with the Marquess of Queensberry!

Next door to the ward room was the galley, with an anthracite cooker and a tank that supplied hot water for cooking and

washing-up. There were rows of cooking utensils, shelves for the current week's rations and a pantry containing two months' supply of food, which was Alan Precious's responsibility. The galley was to prove my testing-ground, when my week as duty cook came round. Our names were on a roster, and with growing nervousness I awaited my turn.

Just off the galley was an old store-room which I converted into a comfortable little base office for myself. I blow-lamped the wood to bring out the grain, then varnished over it to give a rich mahogany finish. I put up chintz curtains at the windows, and pinned several maps on the walls, showing journeys that had been undertaken in the past and routes which were known to exist. In my office I kept copies of scientific records, my file of signals transmitted and received, my copy of *Operational Instructions*, my base diary, and my Depot Book, which was cross-referenced to a wall-map showing the details of every depot laid away from base.

The room was also my post office. Like Scott, Shackleton and Mawson, I had been appointed an Antarctic postmaster, though my main function in this capacity appeared to consist of selling stamps, franked with our base post-mark, to philatelists all over the world, who sent international postal coupons for the value of the stamps required.

Our fire-fighting equipment was in the porch leading off the galley, where we also stored such things as met. balloons and balloon tails, bundles of all the different forms we had to fill in, reserve dish-cloths, mops, oil-cloth, curtain material and hurricane lamps.

The radio workshop was on the left of the porch. On the right were the radio room with its transmitter and receiver, and on the other side of a low partition, the met. office with various dials and instruments fitted to the wall. There were two barometers, a barograph which recorded the change in atmospheric pressure and a wind-speed indicator linked by electric cable to an anemometer on the steel met. tower near the dog spans. A dew cell and an automatic wind-speed recorder, registering

on a roll of graph paper the changes over twenty-four hours, were in the radio workshops. For the last few days of every month the met. office became a scene of much ill-tempered activity as we worked overtime to bring our statistics and returns up to date.

Stepping out of the porch you entered an extension of the hut, with a separating passage which gave two additional exits in case of fire on this, the west end. On the left was the lavatory with the legend "Gents" on the door. It was the smallest room in the hut, smaller in fact than any of our bunks, and the coldest, with its temperature usually well below freezing.

In the centre of the passage was a coal bunker which we filled with ten bags of anthracite every week from our dump outside. On the right through a door, marked "Ladies," was our "maternity" wing.

I have, as I write, a picture in mind of Derek Clarke emerging from a kennel, with a day-old pup in either hand, and grinning with delight. But the birth of a litter was often accompanied by tragedy for Clarke, for if any pups did not come up to the minimum standard birth-weight set for the type of husky we were trying to breed, they had to be destroyed. Clarke hated this more, I think, than anyone.

One of the expectant mothers put in his care was Suik, who had come from Greenland. She was a very strange dog. Unlike other huskies she was timid, cringing and frightened, so much so that if she got loose the only way of catching her was by luring her into a pup pen by putting her brother Nukiak in one.

Clarke was worried about her when she came to have her litter. He was afraid she would kill all her pups, and he was not far wrong. Of her six, only one survived. Clarke brought it out of the kennel barely alive, and tenderly began to nurse and feed it. I was duty cook at the time, and I remember that it was kept in an old felt inner of a snow-boot, placed just inside one of the ovens with the door left open.

After a few days the pup perked up, so that soon it was as strong as if its mother had been more dutiful, but it did not

develop fast enough. Massey weighed it when it was a week old.

"Derek, old man," he said to Clarke, "I'm afraid it's going to be a runt."

Clarke picked it up gently. "So the bloody Antarctic isn't big enough for you, little fellow!" he said bitterly. "Come on, I'll show you a better place."

"Leave the pup to me, if you like," Massey offered.

Clarke shook his head. "It's my job," he said, "I'll do it myself." He turned and took the pup out of the room.

Chapter Six

It was the custom for Captain Johnston to present a turkey to each Base for Christmas. As we feared ours would not keep until then, we had our Christmas dinner on December 22, with the ward room decorated with home-made paper streamers, met. balloons and red-and-silver squares from the balloon tails as table-mats. We all changed for the occasion; I put on my dinner jacket which, apparently, was the first ever seen at Hope Bay.

The turkey was beautifully cooked, with two kinds of stuffing, and served with potatoes, peas, bread sauce and a good, thick gravy. It was followed by a plum pudding and rum sauce, and a series of Rabelaisian speeches, most of which contained some reference to the base leader, "His Honour the Magistrate, Justice of the Peace and Gash Hand Extraordinary of Hope Bay." However, there was not quite enough to drink to make a night of it, so, after consuming what we had in a few appropriate toasts, we all helped with the washing-up and turned in.

Christmas Day itself came as an anti-climax after the somewhat forced gaiety of three days before. As the morning wore on we found ourselves jobs. Tait went down to the graves of Burd and Green, and replanted new crosses in concrete, securing them upright with wire stays. Major, one of the pups, suddenly developed a great swelling by his ear. Massey decided to lance it but as the patient was too young to be given an anæsthetic, Clarke and I had to hold him down. The operation must have hurt a bit and he was very frightened. Anyway, a good deal of pus came out, and when later he rejoined his brothers, he seemed very proud of his bandage.

Not long after this I was outside the hut when Joe Lewis suddenly shot out of the door near the lavatory, armed with a pick-haft, shouting, "There's our lunch! Let me at it!" as he rushed

past me and "bodged" five penguins that had strayed from the rookery. He cooked them beautifully. The breast, which was the only part we ate, tasted something like beefsteak, and the five made an ample meal for the twelve of us.

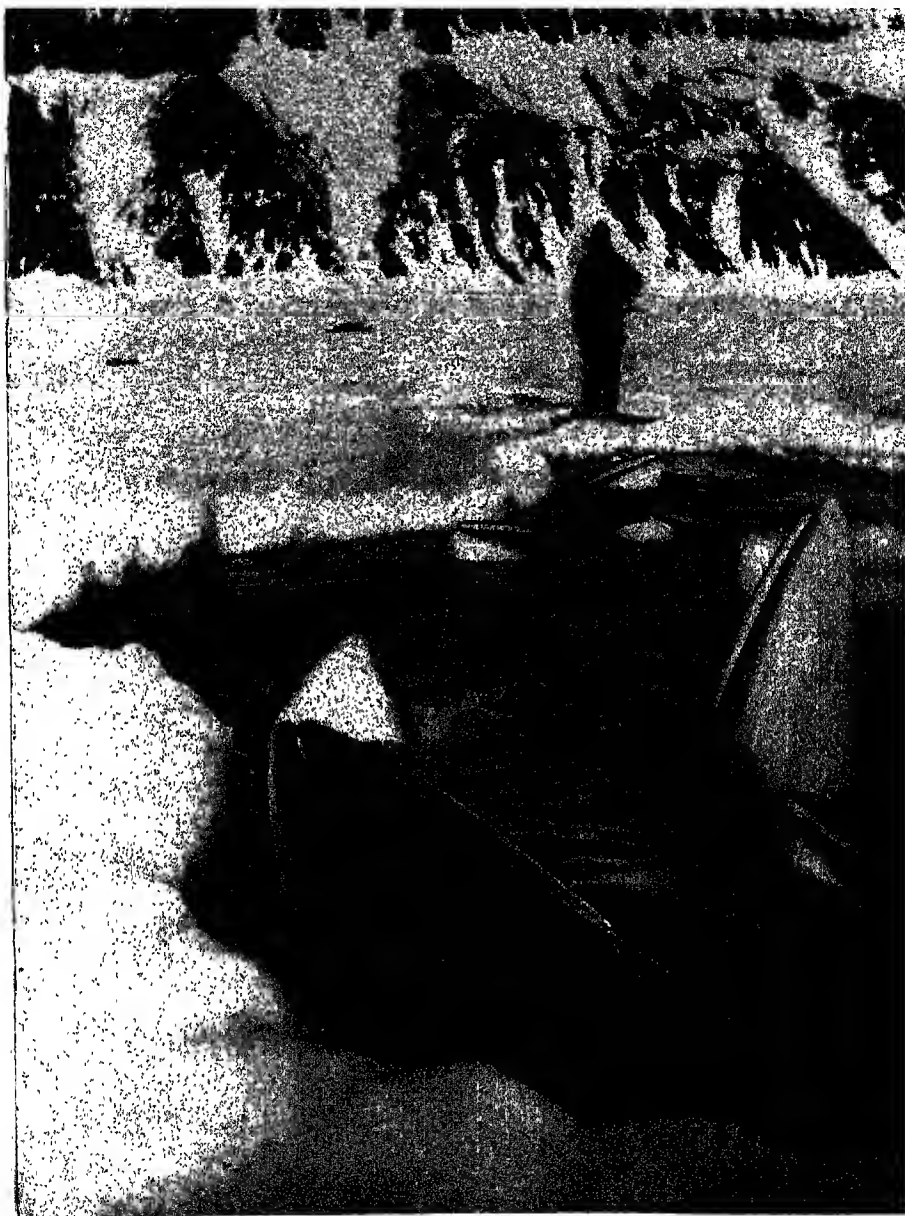
After lunch we listened to the Queen's Speech on the B.B.C., which was followed immediately by *Expedition South*, composed mainly of my recordings in Port Stanley, including the Governor's Christmas message.

On New Year's Eve we dressed up in fancy dress and ski-ed down to our neighbouring Argentine base. Lewis, I remember, went as an ancient Briton, with a couple of sheep skins draped over himself and his bare arms and legs painted with gentian violet; he shivered most of the night. I put on my dinner jacket and went as, I hoped, a well-dressed penguin. We were met by twenty-seven smiling Argentines, all dressed as Arab women with enormous busts, who greeted us with much energetic back-slapping and hand-shaking. It was my second visit, and my relations with the base leader, Major Gonzales Moreno, were proceeding most cordially.

Exchanges of hospitality with the Argentines had begun within a few days of my arrival at Hope Bay, when two Army officers came to pay their respects, dressed in black wind-proof uniforms. They invited me down to their base for tea next day, and I accepted.

It was shortly before Moreno arrived, and I had met his predecessor, Colonel Castro, who came out of the hut to welcome Turner, Tait, Barber and myself. The colonel was a youngish forty, tall, fit and tough. He had a powerful handshake, and I noticed that he had two fingers missing from his right hand. Later I was told that he had lost them through frost-bite when climbing in the Andes. We spoke in French, which was the only language we had in common, and within a few minutes I learned that he had been in the Argentine Mountain Troops Division and as a young officer had served in Peron's regiment.

I had heard that he was a strict and uncompromising disciplinarian, and that one of the punishments he introduced was



Willis standing by one of the pools near Carlson Island on the Main Journey.
The water swarmed with Rorqual and Killer whales

(Right) Thousands of crab-eaters basking in the spring sunshine. Lewis took this picture after he and Clarke had made the first crossing of James Ross Island



(Below) A member of the "Whale-patters' Club" finds a co-operative subject



(Right) A foot and a half high, Adlie penguins take a sedate morning walk





(Left) In the F.I.D.S. tradition, a base leader does his turn as "gash" hand. Tait (left) and Ellery Anderson during the weekly "scrub-out"

(Below) Lewis receives a welcome back to base from "Ruth" and "Colin"



(Right) Clarke beside the Base Post Box, inscribed, "Collections yearly circa December. No deliveries Mid-winter Day, St. Patrick's Day or Judgement Day. Dog licences"



known as the "polar paper chase." Those who were being punished would be taken outside the hut during a high wind by the sergeant, who would let go several sheets of paper, which they would have to run after and pick up. When they retrieved the papers and brought them to the sergeant, he would let them go again and their pursuit would be repeated.

However, I did not see much evidence of work being done at the base; for one thing there appeared to be no office of any kind in either of the huts. Both were larger than ours, with eighteen men in the Army establishment and nine in the Navy. Central heating was laid on, and they had carpets with comfortable, modern furniture, but much space was wasted with corridors that created draughts, though of course they did have the problem of providing separate accommodation for officers and other ranks.

The Argentine dogs were not a patch on ours, and most of them looked, I thought, particularly unhappy. A few St. Bernards had been introduced to cross-breed with their huskies, presumably to add size and strength to the strain; but the experiment was a failure. The mixed breed was found to be unsuitable for work in the Antarctic.

What really upset me that day was the sight of a number of dead penguins in the area that had either been shot for sport or killed by dogs. On the way back to our hut I found one penguin with a bullet hole under its left flipper and a large exit wound by the right leg. I was furious and thought of protesting to Castro against such unnecessary cruelty. But, as somebody wisely pointed out, we were not in a position to enforce a measure of protection. If personalities became involved and the Argentines began shooting the birds just to "show" us, only the penguins would suffer.

Castro's successor, Major Moreno, was an entirely different type. He was an artist—he painted the picture of our hut that now hangs in the ward room—and he had a quiet and sensitive temperament. The day he came to see me he arrived by tractor-drawn sledge. We made him very welcome and put him

in a chair on the sledge, so that one of his officers could drive him home. I watched their erratic journey down the slope, and just before they arrived at their hut, saw the sledge lurch as one of the runners hit a rock. Moreno on his chair was tipped over into the snow.

Now we were crowded in their over-heated living-room, the air rapidly thickening with tobacco smoke, and everybody conversing energetically in sign language. In one corner I noticed Tait in deep conversation with one of the Argentine officers who spoke some English. Later Tait told us what had happened. Apparently the officer asked if it would be possible to get him a bikini from London.

"Can't you get a bikini in the Argentine?" Tait asked.

"No, no, no—it is indecent," the officer explained.

"Who is it for—your wife?" Tait wanted to know.

"No, no, no—for my mistress," the officer protested, and he added: "But don't tell Major Anderson: he thinks I am a very respectable man." It surprised me to think I had ever given that impression.

Meanwhile, Moreno and I were in another corner of the room, eating chunks of barbecued lamb, and washing it down with red wine.

"Major Bill," he said in French, "you and I have one enemy—the Antarctic. Let London and Buenos Aires have their politics. Here in the Antarctic you and I are *amigos*."

"The best," I said, and we toasted friendship.

"Major"—and he filled my glass again—"what are your plans for this year?"

I almost choked with astonishment. Moreno was either ignorant of the entire background to Anglo-Argentine relations in the Antarctic, which was highly unlikely, or he was being somewhat disingenuous.

"Oh, we have no plans," I told him. "I expect we'll go out and take a few theodolite angles, but it's so damned cold and uncomfortable I personally would rather stay at base."

He smiled as he filled my glass again; and I had the feeling

that politics were offensive to him. He had probably been told to find out all he could, had made an honest attempt and was relieved to get it over.

Below the pleasant surface of our relationship there was a keen rivalry between the Argentines and ourselves. We were both out to explore and survey as much of Graham Land as we could, but if I had been fool enough to say where we were thinking of going, one of their parties might very probably try to get there first.

Actually I had only the vaguest idea then of my plans for the main journey. When I had asked the Governor for a specific programme he had said: "I will leave you to arrange that with Elliott. A list of priorities has been put out by the Directorate of Colonial Surveys and the Scientific Bureau."

At that time I felt like having been left very much in the air, but later came to see the wisdom of leaving the details of the planning to the base leader on the spot. Graham Land is too remote to be controlled centrally from a desk in Port Stanley or London. So, in telling Moreno that I did not have any precise plans, I was speaking the truth.

However, when I got back to our hut that night, late as it was, I took out a map of our area and tried to get an idea of the extent of the task that lay before us.

The current map of Graham Land has been compiled largely from the surveys made by sealing captains, scientists and explorers who have travelled in the area since the mainland was first discovered in 1820: men like Weddell, Bellinghausen, Powell, Foster, Biscoe, d'Urville, Ross, Larsen, de Gerlache, Nordenskjöld, Bruce, Charcot, Filchner and Shackleton.

Some of this work is over a hundred years old and was made from ships separated from the land by belts of pack-ice. It was the best they could do at the time, when identification of a distant cape or peak was often difficult, and frequently a fix depended on only one direction and estimate of distance which is generally misleading in the rarefied Antarctic atmosphere. In parts the map was hopelessly inaccurate. Indeed, very little

of the land mapped in the new survey agrees in detail with the old.

Both for political and scientific purposes a map of the peninsula, from Charcot Island in the south-west extremity to Coats Land on the eastern side of the Weddell Sea, was required on a general scale of 1 : 200,000.

It appeared simple at first sight to plan a survey programme for the season. There were plenty of pecked lines on the map showing parts of the coast-line that had yet to be explored, and there was a list of tasks in order of their priority; but to reach these places, to carry on from where previous surveyors had left off, would require sledging journeys of a month or more from base.

All kinds of problems were involved. First, the topography of the area had to be considered. The backbone of the peninsula is an ice-covered plateau 5,000 to 6,000 feet high, sloping down to a coast-line of sheer walls of exposed rock on an average 2,000 feet high, and broken in places by glaciers and icefalls. It was thought impossible to reach the central plateau, and that even if one did get up there it was likely to be too heavily crevassed to travel over, and the weather and visibility too bad to permit any reasonable survey work being done.

For a survey of the coastal detail and the islands, it was necessary to travel by dog sledge over the sea ice. This meant that we could only work from August, in the late winter, when there was sufficient light, to the break-up of the sea ice towards the end of October. If we had anything like three months to complete the job, we should consider ourselves extremely lucky. Even this period, I was warned, would be reduced considerably by intense cold and blizzards, which have been known to keep a sledging party in their tents for eight days at a time.

Logistics had to be considered, because a sledging party of two men and nine dogs could only carry enough food and paraffin for four weeks. If it was going to take us a month to get to the spot where we could start work, a great deal of planning

and preliminary depot-laying would have to precede the operation.

I put the maps away and went to bed. Next day I went back to a detailed study of the subject. I consulted the others, particularly those who had been with Turner the year before. He had attempted to reach Evans Inlet, but intense cold and bad surfaces had forced him to turn back. However, he had left a large depot at Pedersen Nunatak, and another on a col to the north-west of Cape Longing.

We all agreed that if we could enlarge the Longing Col Depot, as it was known, and if sufficient supplies could be taken to Pedersen Nunatak, we could complete the re-survey of King Oscar II coast from Pedersen Nunatak to Cape Alexander, with special reference to the Evans Inlet area and other blanks in the map. This, together with a survey of the northern half of James Ross Island, we estimated would involve a main survey journey of approximately 1,000 miles.

There were doubts expressed by some of those taking part in the discussion, and I suppose they had a right to think I was being perhaps a bit cocksure; never having taken a sledge farther than Boat Point, and blithely planning a 1,000-mile journey. I realized that it was necessary for me to go on a sledging journey myself, and though I knew it was not the right season for such an undertaking, I got hold of Tait and took him into my office. He had been one of the sceptics.

"Jock," I said, "you and I are going to View Point."

"Don't be daft, man. You'll need a boat not a sledge from the way the bay ice is breaking up. You'll have to wait for the surface to freeze hard before you can complete your education."

"Shall I ask somebody else?" I said with some irritation.

"Why do you want to go to View Point?" he demanded.

"I want to look for an overland route back to Hope Bay, across the plateau behind Mount Flora and over Blade Ridge."

"Such a route doesn't exist," Jock declared categorically.

"For heaven's sake!"

"Keep your shirt on, Willie. I'll come with you, against my better judgment, and if there is a route by some remote chance, we'll find it."

Elliott, F.I.D.S. Secretary to the Governor, had particularly asked me to establish whether or not an overland route from View Point to Hope Bay was possible, View Point being a tongue of land on the far side of Duse Bay, where, on the sheltered north side, a small two-man refuge hut had been built.

I intended enlarging this hut to accommodate four men, and ferrying over large quantities of supplies, so that it could then be used as an advanced base. But View Point was normally reached by sledging over the sea ice of Duse Bay, and it was important for me to know whether or not a sledge and dog team could be brought back overland to Hope Bay after the sea ice had broken up in Duse Bay. Then our entire survey programme would not be inhibited by the state of the ice in Duse Bay, which was always an uncertain quantity.

In some years it broke up completely at the approach of the summer. In other years it broke up partly, the rest remaining negotiable but very treacherous. At any rate, it was foolhardy to allow for it to be partly intact after the first three weeks in October, although this was fully two or three weeks ahead of the usual break-up deadline in the Crown Prince Gustav Channel. But if Tait and I could find an alternative route back, the extra margin of two to three weeks might make the difference between success and failure of our mission.

The day before we left, the usual careful preparations were made for the journey. A sledge named "Squeegee Dunk" was brought into the workshop from behind the hut, where our eight¹ Nansen sledges were kept lashed down. Leppard, who was in charge of the sledges, stripped "Squeegee Dunk" down to its components, which were bound together with

¹ The seven others were "Ice-cold Katie," "Bloody Mary," "Suburban Sue," "Eskimo Nell," "Burlington Bertie," "Two-ton Tessie" and "Snake Hips."

cord and raw hide; there wasn't a nail or screw used anywhere in the whole of its main construction. It was of the type developed by Nansen—a masterpiece of tough, resilient ash, built with the precision of a yacht, twelve feet long, with a spliced cane cow-catcher in front to help it over rough brash, upright handle-bars behind and runners that snaked over uneven surfaces. Raised above the runners on short pillars were a series of bridges which supported the two outer and two inner longitudinals where the load rested. Although it weighed only 120 pounds itself, a Nansen sledge was designed to carry up to 1,500 pounds over very rough surfaces.

Conscientiously Leppard checked all the parts, and he worked till nine that night in the cold of the sledge workshop reassembling them.

Meanwhile Tait and I checked the camping equipment, particularly the pyramid tent, which we went over very thoroughly to see there were no small tears in the wind-proof material. I began to feel nervous and excited. It was like the day before a parachute jump.

Rations were checked, traces were examined, harness for our selected dog team, the Players, was tried on each husky, a few tucks being put in or let out to ensure a snug fit. Finally, two sets of polar clothing were brought down from the attic above the dark-room—special anaraks of light-weight, wind-proof material with wolverine collars, snow-boots made of light closely woven canvas with hard, synthetic-rubber soles, sledging gloves, with fur pieces on the back of the knuckles for wiping drift snow off one's goggles, string vests, wind-proof trousers, heavy woollen underpants, known as Long Johns, moccasins made out of reindeer hide or pony skin and tied with rawhide. Though this was summer it was still bitterly cold when the sun went down; besides, the weather was so uncertain we might without warning experience the like of a mid-winter blizzard.

However, the morning we set out the sun was shining out of a cloudless sky and the world was full of sparkle. With the

temperature well below freezing, the snow was hard, and the Players were in fine fettle as we sledged up to Nobby Nunatak, a pyramid-shaped rock a thousand feet above Hope Bay.

We stopped, panting, to look at the view behind us. Away to the left was Mount Taylor with a skull-cap of snow. From its base we could see the peninsula undulating to the beautiful, white symmetrical form of Mount Bransfield standing like a sentinel at the northernmost tip of the continent. Hope Bay itself was bluish-grey, and a few lonely bergs were floating out into the Antarctic Sound. On the skyline to the north-east was the clear outline of Joinville and d'Urville Islands, like enormous, tabular bergs with their ice-cliffs dropping sheer into the sea. The atmosphere was so clear that I could see the fissures in the ice-cliffs, which were thirty miles away.

I felt the insulated silence of the Antarctic; there was no sound save from the panting of the huskies, lying in the snow and looking round occasionally to see if we were ready to start again. We rested for a while, absorbing the grandeur of Hope Bay, until Tait roused the dogs with a shout of "Huit!", and we were off, continuing up the hill over sastrugi, a snow surface of hard, wind-whipped ridges. We reached Summit Pass and set course for the top of Last Hill, so that presently we were looking down on Duse Bay.

I saw why Duse himself had called it the Bay of a Thousand Icebergs. It was a flat white plain, where a vast multitude of bergs and bergy bits were locked in the sea ice. Some were capsized, and lying with their weirdly shaped bottoms embedded with pieces of rock. To Tait's trained eye, the ice seemed safe enough to attempt the crossing, and we began a rapid descent to the tide crack 800 feet below.

Just before we reached it, Digger, our leader, fell into a crevasse and swung on the end of his trace. I went down on a rope, secured by Tait, into the bluish twilight of the crevasse and fastened a second rope round Digger, while he remained absolutely still, as huskies do when they are being helped out of trouble. Then I came up and we hauled him out.

The tide crack was about fifteen yards wide, filled with pulverized ice and broken floes. We had to work our way across, to the bay ice which was then about five feet below the level of the land, as the tide was out. During this operation nearly all the dogs fell through into the water at one time or another and had to be hauled out. It was cold, slow work.

However, the bay ice was smooth, and we made good time towards View Point, threading our way through an eerie maze of imprisoned bergs and brash. At one place as we went through a canyon of green and turquoise-blue bergs, the song I was singing was suddenly repeated by an unearthly echo. By two o'clock the sun was hidden behind Last Hill, and all colour left the scene, leaving us in a vast world of whitish grey shapes.

Six miles short of View Point we were stopped by an extensive lead of open water where the ice had broken up. We would have to skirt round the lead, a detour of several miles, but it was late, and as a mist was coming up from the sea we decided to camp. It was not a wise place to spend the night, but a lesser risk than going on in bad visibility. This spot had a sinister reputation. The year before, two sledges, with two dog teams, and Joe Lewis and John Standring, who were driving them, fell through into the sea when the rotten ice gave way under them.

Lewis managed to crawl up on the ice. He tied a climbing rope to the sledge and, with Alan Precious, who was with them, tried to heave it up on to the ice. When they found this could not be done, they decided to abandon the sledge and release each dog separately from its trace. In that way the dogs were able to get out of the water on their own accord.

Standring was not so fortunate with the other team. In his anxiety to release them from his foundering sledge, he cut the main trace, but the dogs, instead of joining the others, swam straight across the lead. They reached the other side, but unluckily for them were still linked to each other on the trace. As one would succeed in getting out of the water on to the ice, the others would pull it back in again. Lewis told me

that as long as he lives he will never forget the cries of those huskies as they struggled in the water until they became exhausted and finally drowned.

So my first experience of camping in the Antarctic was on uncertain ice. After feeding the dogs, we pitched our tent together in the lee of an old berg, pulling the four bamboo poles apart and pushing the ends into the ice. The skirt flaps were stretched out and pegged down, and the guy ropes were fastened to separate pegs. Then we went through the camping routine as "outside man" and "inside man," rôles which we would alternate from day to day.

I began as "outside man," unloaded the sledge, carefully brushing the loose snow from all the things that had to go into the tent, and passed them through the sleeve entrance to Tait. He spread out the rubber ground-sheet, laid the sheepskin rugs over it and put the sleeping-bags on them. Then, while he started preparing our evening meal, I took off the dogs' harness in case they chewed it during the night, and clipped their collars to the side traces. I put a jerrycan of paraffin by the entrance and a couple of blocks of snow just inside the tent, between the outer and inner walls, to be melted down for water when we needed it. I shovelled plenty of snow all round the tent on the skirt flap, to prevent the wind from getting under and possibly blowing the tent away, and did a final check to see that everything was secure, the sledge and the main trace firmly picketed down, the dogs comfortable and our skis propped upright in the snow in the traditional Antarctic manner.

Finally, I pushed my head into the sleeve entrance and wriggled into the snugly warm atmosphere of the tent enriched with the aroma of stewed steak. The Primus was roaring, and Tait, in Long Johns and thick sweater, was sitting on his sleeping-bag, stirring the pot of stew. His blue wind-proofs were hanging from tapes near the top of the tent. The light of a single candle on the "pots and pans" box threw big shadows on the fabric walls.

"I hope, for your sake, that the dogs are quiet tonight," he

greeted me. "I'm glad it won't be me who'll have to get out of a wee warm bag if there's a fight in the early hours. That's the 'outside man's' privilege."

"Trust you to fix that while we're on rotten ice," I grunted.

"I shouldn't think about the ice if I were you, or you'll not sleep a wink all night. If a wind does blow up and the ice opens under us, we'll be in the water in our sleeping-bags before we know where we are."

However, the Primus's friendly roaring refuted Tait's gloomy speculations, for the tent was now warm and snug. I took off my snow-boots and wind-proof clothing and hung them up to dry. After supper we settled down in our sleeping-bags and lit our pipes. This relaxed and contented moment at the end of the day was to become for me one of the real joys of sledging and made up for all the rigours and discomforts of Antarctic travel.

I was glad of the hood of my sleeping-bag because, when Tait put out the Primus stove and I snuffed out the candle, the temperature inside the tent dropped sharply. I wondered, as I shut my eyes, what my mother would think if she knew that I was lying under a flimsy tent on the ice in an Antarctic bay. Knowing her, I guessed she would see the humour of it. I felt a movement under me, and was suddenly alert, but after a while concluded that it must be my imagination. How strong was the sea ice? For my own peace of mind, better perhaps that I did not know.

The clanging of our alarm clock brought us rudely back to our tent on Duse Bay. I stirred myself and began preparing a breakfast of porridge and coffee. Outside, when we emerged from the tent, the sky was clear, the air crisp and cold and the snow surface seemed ideal. We struck camp, packed, loaded up the sledge, harnessed the dogs and set out again.

After an hour's running, we entered an area of brash where the sea ice had buckled under pressure and frozen with a confusion of bergs and bergy bits to create a lunar landscape of gleaming surrealistic shapes and blue shadows. Tait went ahead

to pick a route, while I handled the sledge. It was tough going; either pushing the sledge to help the dogs or trying to control it when the dogs dashed down a slope. At one place, a large slab of ice sloped steeply towards a patch of water on my right. The moment I started across it, I found the sledge slipping sideways. Try as I might, I could not hold it on course, and wound up in the water. Luckily it was just a melt pool two feet deep, and by holding on to the sledge handle-bars I was dragged out by the dogs as they carried on. I was wet through, but the only damage was to my pipe, which was broken in two.

I changed my socks and snow-boots and we continued. An hour later I had lost sight of Tait, who kept ahead, occasionally climbing a berg to pick out a route, and coming down to signal me on. We were going through a maze of brash and pressure ice when suddenly I heard a crack. The next moment I was up to my chest in icy grey-black water, hanging on to the sledge which was stopped at an angle of forty-five degrees, with the back half partially submerged.

I shouted to the dogs to keep them pulling, but with the runners stuck on the edge of the ice they could not move the sledge. Any moment I expected it to slide backwards into the water, and had horrifying visions of being swept under the ice. *I managed to work my way along the side of the sledge, clinging to the lash-lines.* I reached the ice and pulled myself out of the water. Then, by heaving on the cow-catcher and encouraging the dogs, we succeeded together in getting the sledge back on the ice. A few moments later Tait came round the corner of a berg to find me shaking with cold and fright.

I had another two duckings, when the ice gave way under me as the dogs and sledge went over it, and I was saved on each occasion from falling through into the sea by adhering to one of the primary rules of sledging, which is that the driver must hold on to the handle-bars. In that way I was dragged out by the momentum of the sledge. Being on foot, the rotten ice was not always strong enough to hold me up, though it could take the weight of the sledge distributed over the wide area of its

runners. In the same way Tait, who was on skis, could travel over it in safety.

My final indignity came as we reached View Point and I was walking up over the land towards the hut. Once again the ice gave way under me, and I fell through into a rushing melt-stream.

We spent the afternoon drying out our clothes and sleeping-bags. We fed the dogs from a pile of seal meat cut up and left there the previous November. It was putrid, but the dogs enjoyed it. After preparing a meal for ourselves, we turned in early.

Next morning was clear again, and we decided to climb a 300-foot nunatak known as the Cheese Ring a short distance from the hut, to see if we could pick out a route over the tide crack at the head of the bay and up on to the plateau. From the top of the nunatak the ice in the bay looked perfect for travelling over, and the tide crack seemed easy enough to cross, but it was obvious that the route to the top of the plateau was heavily crevassed.

The nunatak rose like an inverted wedge to a long ridge at the summit. Here Tait and I built a small cairn in the customary Antarctic tradition—a cairn being almost a signature, and one which explorers have left all over that frozen wilderness.

We were reluctant to come down—the sun was about to set and all the distant peaks were delicately tinted with soft pastel shades of blue, yellow, pink and gold. The Antarctic was transfigured. But as soon as the sun had dropped behind the plateau the vista was suddenly stripped of its glory, and our world became once again greyish white. The evening wind springing up made us realize how cold we had got watching the sunset, and we hurried down from the exposed summit of the nunatak to the warmth and security of the lonely little refuge hut.

Next morning we sledged out along the route we had chosen. We had an easy run over the ice to the head of the bay, but when we began the ascent of the plateau we had to wind our way through a network of open crevasses. The real danger,

however, lay in the covered ones which could only be detected by a barely perceptible sagging of the weakened snow-bridges. Tait's experience now proved invaluable, as he was able to spot these; it took me many months before I was able to assess the strength of a bridge over a crevasse, and even then, as I discovered later to my cost, I could easily be mistaken.

By four o'clock we had reached the summit of the plateau, and we camped. Early next morning we continued the journey and headed north. Sledging conditions were perfect. The temperature had been low during the night, and the surface was hard, but the sun was shining down with almost Mediterranean heat from a clear blue sky, and we travelled in our shirt-sleeves, wearing goggles because of the blinding glare off the snow.

By three o'clock that afternoon we reached a point immediately below Mount Taylor on the north side, with Blade Ridge as a barrier between us and Hope Bay. Our problem was to cross over the ridge and find a route back to base. At first sight it appeared hopeless. The lower slopes of the ridge were snow-covered, but above that rose a wall of sheer rock, an impossible-looking obstacle for a sledge and a team of dogs.

"Let's picket the dogs down and do a recce," I suggested.

"Aye," Tait agreed.

When we got to the crest of Blade Ridge we could see the base hut clearly across the inlet at the foot of Depot Glacier, but between us and our destination was a sheer drop of 1,000 feet into the sea. We could, by making our way southwards along the ridge, climb down to the glacier, but I could not see any hope of getting up over the Scar Hills on the other side.

It seemed as though we would have to return the way we came, recrossing Duse Bay—not a prospect to be relished, with the sea ice deteriorating every day.

However, there did appear to be one slight chance of a route where the shoulder of Blade Ridge joined Mount Taylor, and we felt we should at least have a try before giving up. We climbed down to the sledge, and drove it up the snow-slope at an oblique angle, to the base of the rock wall. Here we picketed

down the dogs, and Tait went up the rock face again on another recce. I stayed with the team in case they started fighting; they were stopped on a narrow snow-ledge with a steep drop of 100 feet to the right and we were afraid that if they dragged out the picket they would certainly fall with the sledge into the valley below.

Tait was soon back, grinning.

"What's it like, Jock?" I asked.

"It'll do, Willie," he replied. What he meant was that there appeared to be a possible route which would mean manhandling everything, including the dogs and sledge, first up the rock face, then a few hundred yards along the ridge to where the snow lay on the upper level.

We tackled the job systematically. First, Tait went with the climbing rope to the top of the ridge, where he secured one end round a rock projection, and threw the other end down to me. Then I had to unload the sledge and carry each item of equipment twenty-five yards up a slope of slippery glair ice¹ to a spot immediately below him. Here I tied the loads to the rope and he hauled them up.

Half-way through this operation the dogs suddenly decided to have a fight. I could see the lightened sledge beginning to move with their concerted effort, so I quickly put down the ration box I was carrying, seized the rope brake and thrashed every one of them into silence and respect for the situation.

After all the loads had been raised on to the ridge, I had to go up with each dog separately. Finally the sledge went up, hauled by Tait and myself together. This lift took us six and a half hours, but another hour and a half passed before the sledge was reloaded and we were able to start descending the slope towards Summit Pass. As we went down past Nobby Nunatak we heard the dogs at base howling. Our teams responded excitedly, and presently we were racing downhill with Tait

¹ Most of the surfaces we travelled over were of snow or rough ice. Glair ice is highly polished and very slippery.

pumping the foot brake and calling soothingly, "Arr now. Arr, now, dogs."

At Point 433, where the slope drops steeply down to the bay, we halted the team and released six dogs, in order to make it easier to control the descent. As the freed huskies bounded off to join their companions on the spans, we saw figures rushing out of the hut, waving to welcome us.

We were tired yet satisfied that our first journey of the season had been successful. We felt a good bit nearer to our survey target, not having to worry about the Duse Bay ice, but we had no inkling then of the strange things that were going to happen in the Crown Prince Gustav Channel.

I had still to learn never to trust the unpredictable Antarctic, for when the time came the first break-up of the ice occurred, not in Duse Bay, but in the channel, and we found our return cut off by open sea.

Chapter Seven

ONE of our functions at Hope Bay was the breeding of huskies. It was a serious business, controlled by a strict policy laid down by the F.I.D.S. Scientific Bureau.

On an average, there were seventy-five dogs at Hope Bay, most of which were descended from the Eskimo and Malemute huskies obtained from Labrador in 1944 and 1945. Compared with the Canadian and Greenland huskies we had brought down that year, the "native" stock was altogether tougher, heavier and consequently a little slower, but they were better adapted for the job they had to do for us. We liked to think our Hope Bay huskies the finest in the world.

The dogs weighed between ninety and a hundred pounds and the bitches between sixty and seventy. They were stocky, with broad paws, a wide chest and a coat that was thick enough to withstand the extreme Antarctic cold, but not woolly. Long hair collects a lot of snow and ice which adds weight to the dog when it is working. Occasionally a pup developed a coat of shaggy outer hair. It would be a throw-back and would have to be castrated or destroyed.

Whatever action we took relating to the dogs was recorded in a register, and a signal sent to Port Stanley, who repeated it to London. In addition, a card index was maintained giving each dog's name, number, parentage and date of birth, with a photograph or pelt sketch and details of its progeny, medical history and sledge journeys.

Taylor, who was in charge of the dogs, would select the pairs for breeding, bearing in mind the Scientific Bureau's directive on the subject. If I thought the resulting pups would conform to our ideal of a Hope Bay husky, not only in looks, but in strength, intelligence and ability to work hard, I would agree.

Character is important for a working dog, but one trait we

could not breed out was the husky's propensity for fighting. Not that we ever considered trying, because fighting is a part of the husky's pack instinct, without which it would be useless for pulling a sledge.

Our dogs fought on all occasions, without respect for time or place, except that they succeeded usually in choosing the most inconvenient. At night on a sledging journey they preferred to wait until the "outside" man was snug in his sleeping-bag before challenging each other to mortal combat. I could not count the number of times I have had to dress quickly and go out of the tent in a blizzard to save my team from killing one another.

I once saw a team fight as they were held up on a crumbling snow-bridge over a crevasse. It seemed that any moment the bridge would collapse and they would all fall several hundred feet to their deaths, and yet those huskies fought for no other reason than zest for a rough-house.

Our huskies fought when they were happy, when they were excited, and when they were frightened. I have seen them asleep one moment and in a fury of snarling teeth and fur the next. I have beaten them and they have stopped and immediately fallen asleep again. They fought indiscriminately in a wild free-for-all, unless one went down, when the rest would pile on and tear him to pieces.

Yet a team was always united against all others, which was why we took great care never to allow two teams to get within striking distance. I think our battle of the year was when the Admirals succeeded in wrenching their span free from one of its upright posts. They wheeled in a pivoting attack on the Churchmen on the next span, and most of us at base had to turn out to break up the resulting fight.

It was necessary to hit the antagonists hard to make them stop; either that, or let them be killed or maimed or so cowed in spirit as to be of no further use in the team. Though I have seen a shovel broken on a dog's back before it could be made to

let go of another's throat, I have never known a dog to be injured through being beaten.

I have heard of Norwegian dog handlers who will jump into the middle of a team scrap and bite the more aggressive dogs on the nose to make them behave, but I doubt if anybody could have adopted the same tactics with Hope Bay huskies and got away with it. I was once bitten in the heel through my boot because I foolishly got in the middle of my team, when I should have been on the perimeter of the battle zone, laying about them with a rope brake.

As much as our huskies fought with each other, they could not bear to be parted from the rest of the team. It was one of their saving graces, and the most obvious manifestation of the pack instinct, which they are said to have inherited from the common ancestor they share with the wolf. (Other breeds of dogs are related to the jackal.)

Our huskies spent their lives together as teams, either pulling a sledge or chained to a span. They were never allowed to run free after the age of six months and, indeed, they were never happy on their own. I remember once, on a very pleasant afternoon away from base, thinking that I would take one of the dogs for a walk. I unhooked it from the trace and called it to follow me. It came, but very reluctantly, and the moment I turned and started back towards camp it bolted ahead. On my return I found it sitting happily in its place in the team, waiting to be hooked up again. Normally, a husky would not run away if it got loose. I often discovered when going to harness a dog in the morning that it had unclipped itself from the trace during the night and had not moved from its position.

A pup's training began when at six months it was put on a span. A brand-new harness was made, with its name embroidered in coloured thread and it was taken for its first run, hitched as one of the rear pair and usually with one of its brothers. Pulling a sledge is instinctive to a husky and within an hour the pup would be working like a veteran and enjoying itself immensely.

Though a pup would pull as hard as an adult dog, it tired quickly, so the early months of training were devoted to short runs to give it confidence and stamina. Gradually the journeys were increased until it reached its best at two years, and graduated to one of the more forward parts of the team where the hardest work was done. A dog can work efficiently until it is well into its fifth year. After the age of six it begins to get sent on the smaller journeys and routine hauling about the base. Yap, one of the older dogs on the base, had pulled a sledge the equivalent distance of London to Nairobi in his six years.

One problem was finding leaders. Although a dog did not have to know much more than the four words of command to qualify, it did require an assertiveness that would make it stay out ahead of the rest of the team and lead. If a dog showed promise, it was harnessed with a bitch of the team just behind the leader whom it understudied. Once the young potential leader had learned the words of command it was given a trial to see how it shaped on its own.

People are likely to disagree violently when I say that I do not think huskies are particularly intelligent. I admit that I have heard a number of stories which demonstrate the reverse. I remember Dr. Fuchs telling me of the occasion when he and a sledging companion were returning to base after a journey of several weeks. They still had about sixty miles to cover when they ran into fog and Fuchs had to navigate with a compass. As they went on, he noticed that his team leader, Darkie, kept veering slightly to the right, despite constant checking. Fuchs said he could not understand the dog because it was normally responsive and obedient, but that night when they camped he checked the compass. It was two degrees out, and Darkie, who was heading for home, had been right all the time.

I feel there must be a simple explanation. Darkie was probably following practically obliterated sledge tracks, which my own leader was able to do very well on the return from Cape Alexander.

Huskies have a homing instinct that has been proved on

several occasions. Elliott once told me of two young dogs lost when they went adrift from their teams during a blizzard on the west coast of Trinity Peninsula. Three weeks later one turned up at base 100 miles away from where it had been lost, looking quite sleek and well-fed. The other dog was never seen again. The presumption was that it had been killed in a fight with the survivor and eaten.

However, I personally have never encountered any outstandingly brilliant huskies, though I know many enthusiastic and partisan drivers who, in praise of favourite dogs, are inclined to let their imaginations run away with them. I have heard huskies credited with knowing when they are on rotten ice and I have heard some drivers go so far as to say that, when in doubt, they leave their leader to pick a safe route over ice. I am sure this means taking a serious risk.

When Lewis and Standring and their sledgers and teams went through the ice in Duse Bay they proved, to my satisfaction anyway, that dogs simply don't know whether ice is safe or not.

At the same time I am unreserved in my admiration for the husky's loyalty, courage, affection and willingness to work often beyond its strength and endurance. Without huskies very little of the Antarctic would be known. Taylor estimated, after many experiments and abstruse mathematical computations, that a team of nine dogs developed the work output of roughly a two and a half horse power engine, and that for a fuel consumption of nine pounds of pemmican they could pull a 1,500-pound load twenty-five miles in one day.

Tractors have been used in the Antarctic with considerable effect; the advantage of a tractor being that it can do much more work than a dog team, pulling bigger loads farther and quicker. Besides, a tractor does not consume fuel when it is not working. But no engine is entirely reliable, and no vehicle could go through the sort of brash and up and down such slopes as a dog team will take a sledge.

For our purposes dogs proved the best all-round means of Antarctic travel. Not merely did they work for us, but they

were our friends. They were good for our morale, because driving them, keeping them interested, talking to them, feeding them, even cursing them, relieved the tedium of a long journey. And if the worst happened and our supplies ran out, they could have been eaten as a last resort.

Without huskies the Antarctic would have been a far lonelier place than it was. Apart from the interest we took in them, and the satisfaction and entertainment we had from rearing the pups, our dogs supplied a psychological need. They gave us affection, and they were an outlet for ours. Contrary to the popular idea huskies are not naturally savage. They may fight among themselves, but they are gentle and demonstrative in their behaviour towards men.

When a dog was so glad to see you that he did not bother to touch his food until you had gone, you obviously meant something to him. If you were depressed and sick of your fellow-men, you could always go out to the spans to be made welcome immediately. I admit I was once nearly killed when my team attacked me and fell on me like a pack of wolves, but that was in special circumstances which I shall explain later. Normally they looked to us for everything on which their lives depended, and they were always grateful.

Because dogs became one of our main topics of conversation, and because so many bitter arguments resulted when we discussed the relative merits of individual dogs, the topic, like religion and politics, had to be banned in the hut.

Nobody had the exclusive right to any one team, save Taylor, who used the Number Ones for his research, yet each of us had a dog he particularly liked and admired. It was usually the leader of a team he had travelled with on some journey. He saw virtues in that dog which were hidden from everybody else, and he became so sensitive that any disparaging remark about the dog was taken as a personal insult. Because of this you could get at a man through his dog, and if you really wanted to make him suffer you contrived to take it out store-hauling and gave it hell.

All of which made our final duty to the dogs very difficult indeed. At the age of about seven or eight with, in many cases, 8,000 miles of sledging behind it a dog was really getting too old for work. F.I.D.S. policy did not allow for any sentiment: huskies were in the Antarctic to do a job, and we could not afford to support any old-age pensioners. When the time came they had to be shot.

I think, as I write, of Nosey and Weddie, who were so delighted when Massey and I went to take them off the spans that we felt ashamed of ourselves for what we were going to do. I remember our leading them down the slope and Massey waiting while I went on ahead with Weddie to the icefoot.

I took the .45 revolver out of my pocket and he smelt it and wagged his tail. Then I held him by the collar, put the barrel behind his ear and shot him through the brain. There was a look of surprise and reproach in his eyes as he died. A little later Nosey was shot, and as the bodies of these two fine old huskies floated out with the tide, staining the water near them with their blood, Massey and I walked back up to the hut. Neither of us spoke. We felt that we had just been to the funeral of two old friends.

"I suppose it's better this way," Massey said after a while. "A husky lives for work, and if he cannot go out with the rest of the team I think he would rather be dead."

Some of our huskies served us even after they died. They were given test feeds before they were put down, for Taylor to study the rate of digestion, so that we could know for certain how long after a feed a team was ready to start work again. We even ate one of our old dogs, Scottie, to see what dog tasted like, in case we ran out of food on a journey and had to start eating the team. The meat and liver were excellent, but the meal was a gloomy one, as we all liked Scottie.

Mid-January brought a spell of warm weather and under the blazing sun and cloudless sky the thaw began in earnest.

Torrents of melt water ran down the slope, the snow gave way under us and we sank in slush up to our knees as we went about our daily jobs. Worst of all, it rained, and the immaculate white world around us seemed to weep and sag miserably.

As the snow receded we saw the rock outcrop on which the hut was built. The dog spans were also on rock, so the low ground between became the bed of a rushing torrent that eventually cascaded into the sea, over the icefoot, which now had a series of lively little waterfalls along its entire front. The low temperature at night would freeze the surface of the streams and a fall of snow would restore the slope's virginity but, as you walked over it next morning, the ice cover gave way underfoot. You stepped into perhaps a foot of water and heard the melt stream chuckling at your discomfiture.

The snow, receding from the spans, left a debris of seal skulls, bones and blubber which we gathered up and burnt. The area had to be cleaned out by pouring diesel oil on the rocks and setting fire to it. But now the dogs had no water, so we had to shovel over quantities of snow for them to eat.

Because the black roof of our hut absorbed the heat of the sun the inside became insufferably stuffy. When the wind dropped it became even hotter, so that we stripped and sunbathed, getting a wonderful tan from the sun and the reflected glare. But the slightest puff of wind drove us back into the hut, shivering.

It was a season of exquisite sunrises and sunsets, when the world and the sky would be daubed with the softest colour variations. One morning I remember seeing the sun shining through a haze, surrounded by a large circular spectrum, with two "mock suns" appearing on either side of the true sun.

The thaw retold with vivid effect the grim story of the burnt-out hut. As more and more of it was exposed we uncovered such things as a rusting typewriter with its parts fused together, an old shotgun with its stock burnt off and its barrel twisted, scattered surgical instruments, a fork. Close by stood a Nissen hut that had escaped the fire. It was the old emergency store.

We opened the door to be faced with a wall of solid ice that filled the inside to within a few feet of the top. Near the door we saw imprisoned in the ice various items of stores and equipment—a deck chair with its canvas colours still bright, bottles of sauce, boxes of dog pemmican, tenting material. Between the two huts we found diesel oil drums. They were split and rusty and the oil had seeped out, but we did manage to salvage about twenty tons of anthracite, though the sacks were rotten and they had to be lifted on to the sledge with great care.

Among the coal sacks we saw the steel edge of the keel of an upturned dinghy. This was an exciting prize and we worked feverishly, chipping at the ice to get the boat loose. After several days we had cleared an area of solid ice all round the boat. We could see the name on the stern—*Wren Jones*. We wondered who she could have been—somebody connected with Operation Tabarin? Yet no amount of effort could move the boat. We went on chipping; we tried pouring boiling water round the sides but the boat would not budge. It was held as securely as a mould in which some molten metal had solidified. Then a blizzard interrupted our work, and when we returned to that eerie spot after a couple of days we found that hard compacted snow had filled our excavations, and we were back where we started. After that we abandoned our attempt to recover the dinghy.

Lake Boeckella, at the foot of Mount Flora, had become ice-free. It was a charming little patch of water, about twice the size of a football field, and Leppard and I paddled over it in a rubber dinghy, to take soundings as an added detail to put on the map. At its deepest point the lake was only sixteen feet. During this operation we were attacked by skuas nesting on the lower scree slopes of Flora. Arctic terns came at us, too, like large white swallows with scarlet beaks, with a shrill

staccato chatter like machine guns as they swooped just above our heads.

It was an unusually hot summer for Hope Bay. On the rookery I saw hundreds of downy penguin chicks dying from heat exhaustion. All day long the skuas swooped around them, while the adult guardians rushed at the enemy, screaming with rage and beating at the air with their flippers.

I often felt, as I made recordings at the rookery, that nature had intended the Adèle penguin as a gentle satire on humanity. A foot and a half high with a pure white shirt front and shimmering black back and shoulders, it appeared as a fussy little man in evening dress, curious and short-sighted, who would inspect every strange object by poking its head forward, looking first with one eye, then the other. Often in the middle of such an investigation it might lose interest, ruffle up its feathers and go to sleep for a short while. Later it would open its eyes, yawn, stretch itself, and hobble off.

I found it hard to reconcile their look of solemn wisdom with the fact that they possessed only bird intelligence. In fact penguins were very stupid. They built their nests of stones which were conscientiously gathered from a good distance off although the same sort of stones were often available only a yard or two away. They even stole from other nests, filching a stone quickly from behind an unwary female at the risk of being pursued by an indignant male in and out among the crowded couples on the rookery.

There was something about their courtship which suggested a Thurber cartoon. The hen took up her position on a site and a cock made advances by laying a stone at her feet. At first she rejected him with rough pecks, while he submitted tamely to the treatment and tried again later when she had quietened down. With soft guttural sounds he soothed and flattered her until she coyly accepted his stones, and they set about building a home. Romantic interludes followed with the pair facing each other, stretching their necks upwards, swaying ecstatically

from side to side, beating the air with their flippers, and chanting with pulsating throats.

There was quite a bit of interloping by unattached males when the husbands were away stone-gathering, and then battles had to be fought for these flighty females. The fights were long and relentless, with the opponents standing toe to toe and slugging at each other with their flippers until one was laid flat with most of the breath beaten out of his body. Despite the violence of these encounters, however, I saw no penguin die in battle. After a while the vanquished would get up quite prepared to come back for another round.

Until the eggs appeared, the breeding penguins ate nothing, and when the snow receded from the rookery they suffered a good deal from thirst, lying with their mouths open and tongues exposed. They became very dirty during this fasting season, but as soon as the usual two eggs appeared they took turns at sitting on the nest, while the partner swam and fed on krill in the bay.

The sea was their natural element, where either they floated on the surface like ducks or darted like flashes of silver under water, coming up to breathe, or unexpectedly popping out of the water to land upright on a floe or icefoot. They had a top speed of around twenty knots.

Yet they were afraid of water, at least of taking the first plunge. They would congregate in hundreds on the icefoot trying to make up their minds, waiting for one of their number to get pushed in. Or they played a sort of follow-the-leader, dashing full tilt at the water and stopping at the very last moment, in the hope that the one following close behind would not be able to stop in time and go plop into the water.

The one that went in first acted as a decoy in case a leopard seal was lurking under the floes and, if after swimming round for a while, the penguin was not caught and eaten, the others would follow. The decoy had now earned himself the right to be leader of the party. He would swim about with the others after him, then pop out of the water, landing on the icefoot six feet above. He would lead the party a short way up the

snow slope, then flop on his belly, and toboggan back down the slope with the rest coming after him in rapid succession and all shooting into the water from the very same spot. Twenty yards out they would bob up again splashing and calling to each other. The game would go on for hours.

When the chicks hatched out the fun and games ended for a while, as the parents were kept busy looking for food. They returned with distended crops, and the chicks put their beaks down the adults' throats and helped themselves.

Soon after the eggs had been laid we collected 2,000. It was no easy matter moving a protesting penguin off its nest, taking one egg, and having to face a flipper beating like someone hitting you hard with a school ruler. We preserved the eggs in flour in three-ply sledging ration boxes. They made excellent eating, in taste very like an ordinary fowl's egg, though the white remained transparent after it was cooked.

It was thought that the same pairs of penguins returned faithfully to the same nesting site year after year, and to check this we took a colony of the rookery, marked the nests with red paint, and ringed a hundred couples to check whether they would pair off again in the following spring. Ringing them was even more difficult work than egg collecting, as each bird had to be lifted off its feet by one man and held down flat with his knee on its chest while a second man adjusted a numbered aluminium strip to the right flipper where it joined the body. After that both men had to reckon with the outraged penguin, who came at them in a rush of fury and indignation. With hands cold and numb the flipper smacks hurt and the penguin definitely got the better of it.

The warm weather continued until February with occasional "whirlies" or snow-spouts, like evil genie moving across a background of leaden skies. There was the occasional roar of an avalanche, and now and again we heard the icebergs calving with a boom like distant gunfire. One night I actually saw an

iceberg born. I had just loaded a sledge with stores at the ice-foot and was looking across the bay at the ice-cliffs on the peninsula. Suddenly a huge section of the cliff began to slide into the sea. It disappeared below the surface, then reappeared surrounded with brash and bergy bits, as the thunder reached me. Slowly the berg began to move out of the bay. Then I looked out to the Antarctic Sound, where it would eventually go, and could see the horizon castellated with hundreds of other bergs.

During the summer the bay was our main source of interest. It teemed with life—penguins, seals, occasional grampus or Killer whales. Birds hovered and swooped above the floes—skuas, paddies, Dominican gulls, Wilson petrels, and sometimes an albatross or giant petrel. There was always something happening in the bay.

The summer warmth and sparkle seemed to have brought a lightness and gaiety to it, as *soufflés* of white foam effervesced around the rocks below the icefoot and the water acquired a bluish-green translucence. With the sun at the right angle you could look over the side of a boat and see fathoms down to strange shadowy depths lit with shimmering flashes. The waves danced, the sun scattered brilliance and the wind herded gleaming white flocks of ice into the bay and drove them out again.

The ice was perpetually moving about and its varying patterns fascinated us. The first thing we did every morning was to look out of the window and see what changes had occurred during the night and try and interpret the new mood of the bay. We studied it closely, but the more I learned the greater became my respect for it. It was rather like going to live with somebody who on the surface is charming but turns out to have a cruel and ruthless streak.

One night one of the Argentines went to read the tide gauge below their huts. Usually it was done from their jetty built of planks on oil drums, the tide gauge being against some rocks about ten yards away. It was not a pleasant night: heavy snow fell with a wind of about twenty-five knots, and when he shone

his torch across at the tide gauge he found that he could not see it.

From the Army hut he was spotted getting into the boat tied to the jetty, and pushing off and attempting to pole himself across to the tide gauge with one oar. The man who saw him do this immediately ran down to the rocks, shouting to him not to be such a fool, but the boat was already several yards out, being blown farther and farther away while he tried desperately to propel himself back with the single oar. The other man then acted very courageously. He dived into the water and swam out, intending to capsize the boat and rescue him but it was too late. The boat was being taken out too swiftly, and could not be reached.

The would-be rescuer was barely able to return to the shore. He was taken out of the water hardly able to move, and he was on the dangerously-ill list for three days. The other was swept out of the bay and never seen again.

He was inexperienced and took a pretty obvious risk for which he paid with his life. But it was also very easy to be deceived by an Antarctic bay, to be taken unawares when the sea appeared gentle and placid and the waves were lapping softly around the rocks. The danger was insidious because you were lulled into a false sense of security. You tended to overlook simple precautions and that, as one F.I.D.S. man found out, could easily prove fatal.

Bob Whittock came down with me on the *John Biscoe* from Southampton. He was posted to Port Lockroy with Alan Carroll, who went as base leader. It is on the west side of Wiencke Island, which is south of Anvers Island in the Palmer Archipelago off the west coast of Graham Land. Tucked away to the west of Wiencke is Doumer, a small island, with the Peltier Channel between. There is a powerful current up the channel, and this undoubtedly was instrumental in saving Whittock's life.

He and Carroll had been on a survey trip to Anvers Island in the base dinghy. They had returned to Port Lockroy, and while

Carroll had gone ashore to help unload, Whittock had remained in the boat. He began passing up their gear to his companion. Among other things he handed Carroll were the oars.

They had nearly finished unloading when a groundsheet fell into the water and Whittock bent down to get it out, but it floated just out of his reach. The boat had not been tied up and neither of them noticed that it had drifted a little way from the rocks during Whittock's efforts to retrieve the groundsheet. As Carroll said later, he was not unduly perturbed when he did see what was happening. The outboard motor had been working perfectly up to a few minutes before and all Whittock had to do was start it up.

Unfortunately for him, the motor would not re-start, despite his desperate efforts while the boat swung out into the ebb-tide current. Presently he found himself being carried swiftly into the Neumayer Channel between Wiencke and Anvers. Carroll, meanwhile, could do nothing to help. He ran up to the base hut shouting to the other men, but there was nothing they could do. There was no other boat. Whittock went out into the gathering autumn dusk as the tide took him southwards into the Neumayer Channel.

Eventually he gave up trying to start the outboard motor and, to combat the night cold, decided to prepare himself a hot meal. A Primus stove and emergency tins of food were always kept in the dinghy, but when he looked he could find neither matches nor tin-opener.

The dinghy continued southwards, moving eastwards round the south coast of Doumer, then northwards again up the Peltier Channel, and finally after fourteen hours it drifted ashore on Wiencke Island. By this time Whittock was badly frost-bitten and so cold he was scarcely able to move. He had to force himself to get out of the boat, and started out to walk back to Port Lockroy, six miles away, skirting the coast. On the way he fell four times into crevasses of up to twenty feet in depth. On each occasion, as he recalled, he was greatly tempted

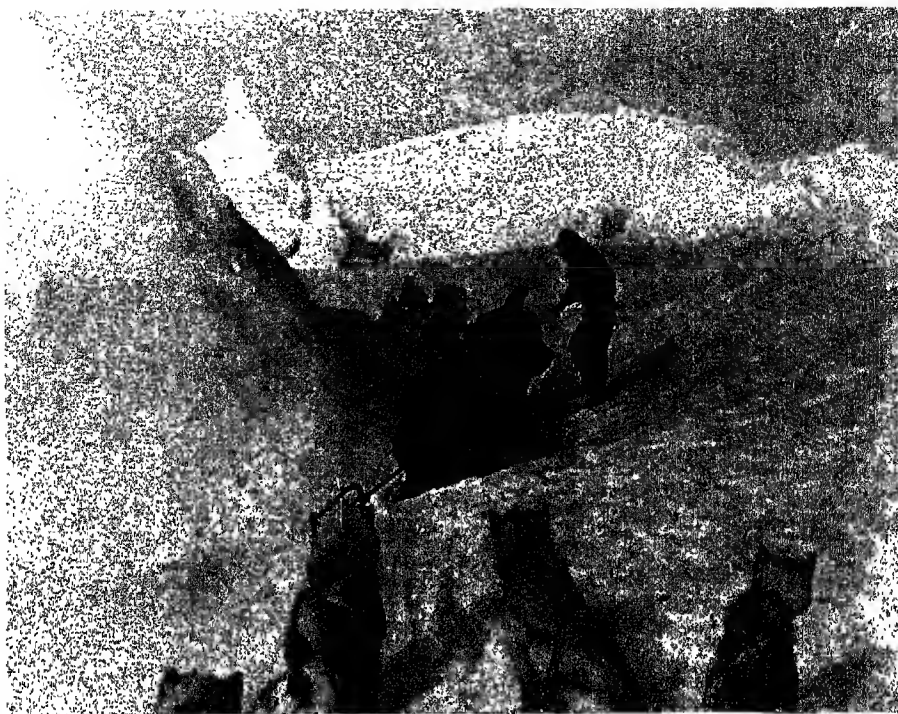
to lie there and die. Yet he got up and continued. The walk took eight hours, and he arrived back in a state of collapse.

At least Whittock lived to tell the tale. The unfortunate Argentine was probably taken out into the Antarctic Sound and eventually into the Bransfield Strait, where his boat was undoubtedly crushed and sunk in the pack-ice. An S.O.S. was sent out to the *John Biscoe*, which was in the area at the time, but although she searched for several days no trace of him was ever found.

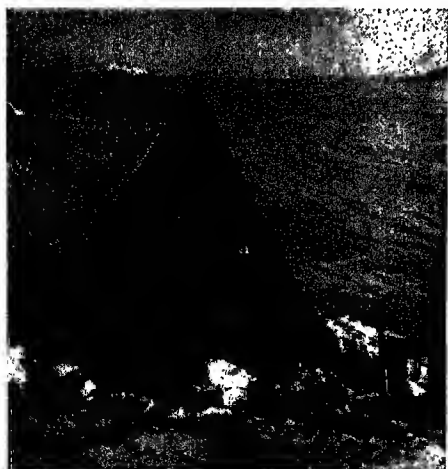
As it would have cost about £40 each time we fed our dogs at base on pemmican, they had to be fed on seal. We would spot the seals lying usually in couples on a floe, like black inverted commas, and two or three of us would go out after them in a dinghy. It was difficult to see them from the boat, so we would pick a route before setting out. With the ice in the bay changing position all the time, it often took hours looking for the floe with our quarry on it. When we had shot and gutted them, we lashed them to the sides of the dinghy and returned to Boat Point with a crimson trail in our wake. To bring back a couple of seals after several hours hunting was something of an achievement, as a good-sized crabeater represented about sixty dog feeds.

It was cold and unpleasant work, and dangerous because it was almost worth taking chances for a good bag. Perhaps we became too confident, but we also learned our lesson. We found out that the bay could be merciless, even in its moments of great beauty when the deep blue water seemed nearly still with the bergs rising and falling like white monsters breathing gently in their sleep.

I remember one evening in the late summer when Clarke, Tait and I went out after six seals. It was so unusual to see more than a couple at a time that we determined to create a record by killing the lot on one trip. Three were on one floe and three on another, the floes being a quarter of a mile apart



Hauling through the pressure-ice on the Main Journey near Borchgrevink.
Taylor (left) and Tait with the "Players"



Kenney's tent the morning after a blizzard. The box on the right contains 48 lb. of dog pemmican. The two-gallon tin of paraffin had to last ten days



One of Leppard's tasks on the Main Journey was to survey the coast-line of Graham Land Peninsula



"Spark," leader of the "Number Ones."



"Kiltie," who developed a cataract in his right eye. He was shot ten minutes after this photograph was taken

(Below) "Flook," a young and nervous dog who pulled with his brother, "Bodger," as third pair of the "Players"



with a maze of varied ice shapes between. Our plan was to go to the first floe, shoot the three, and leave Tait to do the gutting while Clarke and I went on to the second floe, where I would shoot the other batch.

The plan worked perfectly. All six seals were shot but, in order to save time, as it was already dusk, I sent Clarke back in the dinghy to help Tait, while I remained on the second floe and completed the gutting. Instead of returning for me, they decided to take the first three seals back to Boat Point. To do that, haul the carcasses up the rocks and come out again for me took an hour and a half.

Meanwhile, dusk deepened into night, and a primrose moon rose up to cast a strange glow over the silent unearthly scene. The temperature dropped sharply. The hot seal blood that had melted deep channels in the floe froze in the ice like red veins. Water had seeped into my boots, and the cold began eating into me. I could see the lights of our hut two miles away and longed for the comfort of the ward room. I kept myself warm by marching up and down like a sentry, doing arms drill with the rifle I had used to kill the seals, and shouting words of command.

Then I realized I was drifting and felt as if I was on a revolving stage in a darkened theatre with a chorus of dead seals and an audience of bluish-white ghostly shapes. A bitter, cutting wind had sprung up, and I could see my floe beginning to move with the current out towards the open sea. My fear was that my companions would not be able to find my floe in the dark when they came to fetch me, as the layout of the ice was altering all the time.

After what seemed hours I heard the sound of the outboard motor, but the dinghy did not seem to be coming towards me. As I expected, they were going where they thought I was, but I had moved a good distance from there. I shouted for all I was worth, but they could not hear me above the chugging of the motor.

Fortunately for me, I still had four rounds of ammunition,

and I fired a shot to attract their attention. I waited, then heard them coming in my direction and, by firing the other three shots at intervals, I was able to guide Tait and Clarke to my floe.

"Where the devil have you been?" I demanded.

"What's the fuss?" Tait asked. "Were the seals trying to get away?"

We still had to get my three seals back to Boat Point, and started on the homeward journey. It was past one o'clock when we got back to the hut, cold, tired and very hungry. However, the duty cook was waiting for us with a meal of scrambled penguins' eggs and cocoa laced with rum.

Most of the seals we killed in Hope Bay were crabeaters, the seal of the pack-ice, but we also got the mottled silver grey and black Weddells that live nearer the land and spend the winter under the ice, breathing through blow-holes they keep open by scraping the ice with their canine teeth. And there were also leopard seals, the most vicious and dangerous of the species.

Leopard seals, or sea leopards as they are otherwise known, have a long sleek body, dark grey in colour and spotted with white and silver, with a large flattish head and a wide mouth with interlocking teeth. They live on fish, birds and other seals, which they have been seen to kill and devour on the floes. We took no chances with sea leopards, and shot them from a safe distance of five or six yards.

We saw only one elephant seal. I remember Clarke coming into the hut and saying: "There's a large Weddell on the beach near Boat Point."

I had wanted to make a recording of a seal being killed, so I took out my machine and went down to the beach with Clarke and Precious.

"That's a bloody big Weddell," I said as we approached it.

"It's not a Weddell, it's an elephant," Precious said excitedly.

"I've never heard of them before in Hope Bay."

The tide was out and it was basking on the shingle beach below the icefoot—an enormous, bloated, blubbery mass

about seventeen feet in length, with a large bulbous proboscis. I put down the recorder and began describing it as Precious went close up with the .45 revolver and put three shots into its head. Blood spouted out of the holes, otherwise the bullets seemed to make no impression. It shook its head and inflated its snout, raising itself up so that it now looked down on Precious. And it belched; a gargantuan belch.

Precious pumped two more shots into its head and one into its neck, but all the seal did was to lurch from side to side, roaring and belching.

To keep it from turning and going into the sea, I attacked it with a boat-hook while Precious was reloading. My blows, which would have floored any other seal, thudded ineffectually off its bleeding head.

"Let me have a shot at it," I said, taking the revolver from Precious when he had reloaded. Then as the seal belched again I fired into its open mouth. Even that made no difference because it heaved itself round and made for the sea. I shot at it again, putting another two bullets into the head, but still it managed to splash into the water and swim away.

We followed its course out past Grunden Rock. It was moving slowly, obviously in agony. By not using a more powerful weapon, we had lost a valuable addition to our dogs' larder but, what was more regrettable, we had caused unnecessary suffering to that great pathetic creature.

The six seals that Tait, Clarke and I had bagged on a single trip was by no means the record of the season's hunting. It was nothing compared with the number we got in a few minutes one day near Grunden Rock, for which we undoubtedly have to thank a pack of Killer whales. I remember that morning noticing a disturbance among the penguins in the bay. They were porpoising at great speed, making for the land and popping up on the icefoot in their hundreds. Then, a few moments later, five black-and-white shapes broke the surface of the water with a snapping of teeth as the nearest penguins were eaten.

I was so absorbed watching the Killers at their deadly work that I did not realize what was happening elsewhere. Then, as they turned and began a cruising sweep of the bay, I saw that suddenly there were crabeaters on floes all over the bay, and that Sheppard Point was literally black with seals. On our side, too, a number had come out on the beach near Grunden Rock.

I ran up to the hut calling everybody to turn out. Lewis grabbed the rifle, Precious took the revolver and we all hurried down the slope. We could see the five black dorsal fins of the Killers cutting through the waves as they porpoised towards the inlet. Presently they were lost to view. After a while they reappeared, now travelling at considerable speed towards Grunden Rock. We could see them quite clearly, like outsize dolphins about twenty to thirty feet in length, with a white camouflage mark on the side of the body just behind the head. These were the ravening wolves of the Antarctic seas that have been known to attack even the biggest whales. Sailors have heard their battles miles away—the pain-crazed bellowing of the big whale as the Killers fasten their teeth on its tail, belly, tongue, and smacks like explosions as it leaps high out of the water to bring its enormous bulk smashing down on its tormentors.

Ponting, who was the photographer with Scott on the *Terra Nova*, tells of how he was nearly eaten by Killer whales when he went to the edge of the sea ice to photograph a pack. They broke the ice he was standing on by surfacing under it, so that he was nearly tipped into the water. Then he was pursued by the pack as he made his way across the broken ice using the larger pieces as stepping-stones. He reached the safety of the intact ice just in time.

For thousands of generations seals have been tipped off floes in this way and devoured by Killers. Those that survived passed on the memory of this fear to their descendants, which possibly explains why the presence of five Killers in Hope Bay drove such a number of seals out of the water. The beach near Grunden

Rock was now punctuated with twenty-nine crabeaters who seemed to be in a state of great agitation, even though they were safe from the Killers. Unfortunately for them, they had not yet learned of a more deadly enemy on land. Had they chanced going into the water some would probably have got away, but they let us come right up to them, and we killed them all.

During the summer while the pack-ice was still negotiable, the bay remained our link with home. One evening, the Norwegian sealer *Norsel* came in, handled with great aplomb by her skipper, Captain Jakobsen, who turned the ship in a half-circle, and dropped anchor with a splash and a rattle.

She brought Worswick, Willis and Mander, so that the relief of Base D was now complete, and she went out with Barber, who was returning to England, Hooper who was going on to establish the proposed new base at Anvers Island, and Vine-Lott, who was going to join a F.I.D.S. party on their way to reopen the old base on Stonington Island in Marguerite Bay.

A few weeks later, we learned that ice had prevented the *Norsel* from getting in, and that instead the party had established a new base, Base Y, on Horseshoe Island, twenty-five miles north of Stonington.

Hope Bay was visited by a succession of Argentine relief ships—the *Yamana*, the *Buen Suceso* and the *Bahia Aguirra*. Then one morning I looked out of the window of the hut and saw the Argentine ice-breaker, the *General San Martin*, at anchor 200 yards off Seal Point, with a flock of Cape pigeons bobbing about on the water near her bow like toy ducks. Her loud-speakers were blaring Argentine music—rumbas and tangos that went on all morning and made our huskies howl in protest.

A helicopter was used to unload crates of food and stores off the ship and dump them near the Argentine huts. I was laboriously sledging our own stores from the ice-shelf during this slick and efficient re-supply operation, and I could not help

feeling that we were being run on a shoe-string compared with the Argentines, whose Government seemed to spare no expense to make life as comfortable as possible for them. Even their dogs were fed on good beef.

The *John Biscoe*, paying her second call, was the last ship of the season. Taylor and I were out in the dinghy the afternoon she returned. The bay was chock-a-block with ice.

"They signalled they'd be in by three o'clock, and it's that now," I said.

"Pull up to a berg," Taylor said. "I'll climb to the top and see if I can spot her."

I stopped the boat by a little berg that resembled a piece of impressionist sculpture, and Taylor went up the side of it, while I stayed in the boat to fend off any stray floes that might easily crush it against the berg.

"She's coming in," Taylor called down to me. "I can just see her crow's-nest, dodging in and out through the ice."

There was so much ice in the bay that the ship took three hours to come in the remaining mile or so to her anchorage.

Normally a ship never wastes time in Hope Bay, but as our second consignment of supplies could not be unloaded, on account of the ice, we were invited on board for the usual film show. Eight of the base members went, but I stayed behind in the hut with three others who were not particularly interested.

We had for company the cook and mess boy of the *John Biscoe*, who had come ashore for a change, and they prepared us a meal, but while we were eating it the wind suddenly increased to a fifty-knot gale. Ice with bergy bits as big as houses closed in round the ship, and those on board were marooned there for the next four days.

Though our supplies were welcome, the sight of the huge stack dumped on the icefoot was depressing. The coal alone represented sixty-four sledge trips moving six sacks at a time up the steep slope to the hut. And there were 125 seal carcasses, apart from a second lot of diesel-oil drums, cans of paraffin and cases of food.

However, it had occurred to me that the *John Biscoe* could save us hard work by carrying round to View Point all the stores that were required for the build-up preparatory to our journeys in the Crown Prince Gustav Channel. I also wanted to enlarge the hut at View Point and use it as a permanent met. station, so altogether about ten tons of stores and equipment were involved. It would take us weeks to haul it over Summit Pass and across Duse Bay.

Captain Johnston readily agreed when I asked him if he would carry out the shipment. Unfortunately, close pack barred the *John Biscoe's* access to View Point, and her steering-gear was damaged in the attempt to get in. The consignment was landed at Beak Island six miles away, and the ship returned to Hope Bay with Tait, who had gone to help in the operation.

After dropping Tait, Captain Johnston left immediately. It was already late in the season, with pancake ice¹ forming on the sea, and he did not want to be caught in the pack. It was going to be hard enough getting out without having to cope with a rudder that would not turn properly. We kept in touch with the ship, as we anxiously followed her course through the pack, and were all relieved when it was reported that she was safely out of the ice.

The sun had now lost its warmth, the days were getting colder and the blizzards more frequent. The birds had left, except a few paddies (Sheathbills) and the penguins which were waiting for their chicks to become fully grown. Then we began to experience a few hours of darkness at night, and steadily the darkness increased.

The penguins were the last to leave Hope Bay. When the chicks had acquired adult plumage, we saw long processions of the birds waddling and tobogganing down from the rookery to the icefoot. There, as usual, they congregated, waiting for one

¹ Newly-formed sea ice, usually circular with a raised rim like a water-lily leaf.

to get pushed in while the others followed after making sure it was all right. Parties of chattering penguins floated out of the bay on ice-floes. It was a happy time for them, as they were going north to winter in warmer climes. Some were left behind and would wander up to the hut, but after a few days even the laggards had departed.

One morning I looked out of the hut, and there was not a penguin in sight. The bay was suddenly very lonely and very cold. The water had lost its colour and sparkle. It had become black, and where once it had foamed and danced lightly round the rocks, now it lapped and swirled with heavy sinister effect. Sludge¹ and ice rind² were forming on the surface.

Although the current and high winds would hardly ever allow Hope Bay to freeze over during the winter, the pack in the Antarctic Sound was solid, and we were completely isolated. One day towards the end of March, Paul Massey went out of the hut to give a dog a penicillin injection. Before he had gone ten yards the fluid in his hypodermic syringe was frozen hard.

The Antarctic winter was upon us and we turned our backs on the bay, no longer watching its moods and changes. Our interest shifted to the south, and we began to look forward to our winter journeys of survey and exploration.

¹ Small fragments of ice coagulated to form a thick layer on the surface, reflecting little light.

² A thin crust of frozen sludge forming on a calm sea surface.

Chapter Eight

EARLY in May I went with Massey and Clarke to View Point, where we camped and began a shuttle service, moving part of the ten tons of stores, building materials and equipment on Beak Island to a dump near the refuge hut. The sea ice between the island and the mainland was level, which not only made it possible for us to haul half a ton on each trip, but also provided an excellent opportunity to practise sledging, with all its refinements.

The most important part of sledging is, of course, the handling of the dogs. The first rule is that only the driver may speak to the team or give a word of command to the leader. The two men who comprise a sledging party take turns, each driving for fifty-five minutes, and the other taking over after a five-minute break. It is exhausting work for the driver, who has to keep on encouraging the team and checking the slackers, as well as picking the route. Eskimoes use a long sledging whip to keep their dogs up to the mark, but you require a great deal of experience to use a whip accurately, and those of us who did carry one contented ourselves with cracking it in the snow on either side of the team to turn them in an emergency.

When there is more than one sledge in a party, starting and stopping is carried out on a signal given by the leading driver, who holds up his right hand and waits for the other drivers to repeat the signal before he gives the appropriate word of command to his team. The only other sledging signal is an energetic swinging of the right hand behind the back, which is given by a driver to warn those following him of a crevasse. No shouting is permitted between sledges, as this only confuses the dogs. Indeed, the purists do not even approve of the two sledging partners talking, though personally I found that talking often

helped to lessen the monotony of a long journey.

Some "experts" maintain that a man should never ride on a sledge, unless the dogs are trotting too fast for him to be able to keep up—he could then stand straddling the sledge with a foot on either runner holding on to the handle-bars. Here again I believe that if a man is tired it is most important that he should have an opportunity of resting, and ride at whatever speed the dogs are travelling, for it is the man who needs his strength in an emergency.

One method for starting a heavily-laden sledge on a difficult surface is for the driver to pull back on the trace. This immediately makes the dogs strain forward. Then he lets it go suddenly with a shout of "Huit!" and the dogs are off. It is important, before the leading sledge starts, for the driver to make absolutely certain that those behind know he is about to move off. The reason is that once a sledge starts moving the team behind may follow, without waiting for their driver's word of command. If taken unawares he might be left behind, and it is no easy matter trying to catch up with a runaway sledge. Worse still, the lampwick cord attached to his gloves and hanging round his neck may get caught on the handle-bars and he will be dragged behind the sledge by his neck.

Only once did I lose my sledge to a team of fresh and vigorous dogs, and, with disgust; I remember my marathon run across the ice in pursuit of it. This happened the day after Tait and Worswick had arrived at View Point to start building an extension to the refuge hut. Worswick had offered to accompany me to Beak Island to help load up some of the timber and building materials required. We started out with Worswick sitting on the sledge and the dogs bounding downhill towards the sea ice. The tide crack was about three feet wide at the point where we crossed, but the sledge was going so fast it lurched as we went over the crack, throwing Worswick one way and me the other. By the time we picked ourselves up the dogs were tearing across the sea ice with the unladen sledge skimming

behind them at a good fifteen miles an hour.

I ran after it, shouting, but to no effect. They knew the way to Beak, and it was obvious that I did not have a hope of catching up until the team reached the depot on the island. My fear was that they might start fighting, and, without somebody to stop them, real damage could have been done.

I ran for a mile before Massey and Clarke, riding on their sledge, caught me up. I jumped on and we continued towards Beak, until suddenly I saw my team returning. They seemed to have become bored with their newly-found liberty and had come back to look for me.

One of the trickiest sledging operations is the final stop at the end of the day's run, when the dogs are hungry and expecting to be fed. After the leading driver gives the signal to stop, those following close in near the proposed camp site, and all the teams are picketed down at the same time by the second men, while the drivers wait behind the sledges, standing with one foot on the brake. Each second man, taking a spade to the front of the team, digs in the snow to reach the ice, then drives in the picket at an acute angle to the direction in which the team is facing, so that when the trace is tied to it any exertion on the part of the team only serves to pull the picket in farther. The second men wait until all the teams are picketed down, then they walk back to the sledges, quickly take out their pemmican boxes, and run up the side of the teams throwing each dog a block. Moments count, as the dogs guess what is afoot and, as soon as the second man unties the lash-lines on the sledge, they start jumping about on their side-traces. Nine dogs pulling concertedly can shift a picket. If this happens and a team gets loose, it will invariably make a concerted rush for the pemmican box.

As second man, I had once some difficulty untying the lash-lines on my sledge. I had just got out the pemmican box when I heard the driver shout, and looked over my shoulder to see the team bearing down upon me. I slammed down the lid of the box, grabbed the rope and leathered them back into their

places. The driver moved them forward, and I had to go through the picketing drill all over again.

Massey, Clarke and I spent a few days at View Point, before returning to base to allow others to go out and continue the store-hauling. Everybody enjoyed going to View Point. It was a break from routine, and the hut when completed was cosy and comfortable. It was called the Seal-Catchers' Arms, and bore a sign, painted by Tait, of a husky dreaming of a seal for his supper. When the extension had been added, it consisted of a single room with sleeping accommodation for four people, an anthracite stove which really made it very snug and a Primus for cooking. There were lockers, books and playing cards, and of course met. instruments and a radio set, with a wind charger to supply the power.

It was occupied for a period as an additional met. station, but when the winter sledging journeys began I found that men could not be spared from Base to run it. I had to close it down at a met. station, but it continued to serve a very useful purpose as a rest centre where people could be sent if they needed a change.

After the middle of May I began sending out small parties on minor sledging journeys for forty to sixty miles. Most of these were for local survey, but I also wanted to get as many men as possible away from base. I was opposed to the idea that personnel should be categorized as "sledging" or "non-sledging." It was bad for the morale of those whose duties tended to keep them indoors if they did not get a chance of some real Antarctic travel.

Naturally, I suppose, the sledging parties preferred to wait for fine sunny mornings before setting out, but I insisted that, provided it was safe, people should leave in fair weather or foul. If they only emerged on fine days, we were not going to

get very far in the Antarctic. This policy, I am afraid, nearly resulted in tragedy.

It was to be a short run, for two parties consisting of Worswick and Kenney, and Taylor and Willis, but it was blowing quite hard that morning and so the trip was postponed. Taylor and Kenney both said that they thought it would mean taking a risk, and I told them they could please themselves. Next day conditions had improved a little and I made it clear that I disapproved of their holding back. To please me, they went. They returned the next day with a terrifying story.

They had set out in the early afternoon, but by the time they reached Summit Pass they were facing a head wind of gale force, so they decided to camp and lie up for the rest of the day. They fed their dogs and "storm-pitched" their tents on the pass. This was done by tying a rope to the apex of the tent and anchoring it to the sledge. The tent was then laid on the snow, pointing into the wind, the skirt flap of the back wall was picketed to the ice and the four poles jerked upright. With the top held to the sledge the wind helped to drive the poles firmly into the snow.

After a meal the occupants of both tents turned in. As Taylor recalled, they lay listening to the wind tearing at the tent like a demented fiend trying to get inside, but what really worried him was the way the tent walls were flapping. He was an experienced sledger who had camped in all weathers; but now he sensed that something was not quite right with the tent. Down at base that night the anemometer recorded gusts of ninety knots, so on the pass they must have been getting the full impact of the gale with added pressure as each gust was forced through the gap.

At about ten o'clock the tent began to move slightly as each frenzied gust punched it. The give was imperceptible at first, but as the guy-ropes were loosened the movement of the tent poles increased, and the tent rocked under each screaming blow.

"I think we'd better get dressed," Taylor told Willis. "Then I'll go out and tighten up a bit."

They lit their candle, but it was immediately blown out by the flapping tent walls, so they had to feel for their several layers of clothing in the dark and dress in the confined space of the tent, with the flapping impelling them to hurry. That only made dressing even more difficult.

Taylor told me later: "We must have struggled for about a quarter of an hour before we finally got ourselves sorted out. To be on the safe side, we hung our compasses round our necks and stuffed some chocolate in our pockets."

These precautions undoubtedly saved their lives, for without warning the tent was whipped away from over them, and they were suddenly out in the blizzard, with the drift coming at them like sand out of a sand-blasting gun. Taylor said he felt himself being pulled along. He grabbed at his sleeping-bag, but this was wrenched out of his grasp as the Everest-type air mattress they were trying out on the journey struck him in the face. A moment later the mattress was gone as well.

Meanwhile, Willis was holding on to his sleeping-bag in a grim embrace as he and it were being rolled over and over by the wind. He could not say how far he was taken, but managed to stop by writhing in the snow until he was lying with his head into the wind. He had lost touch with Taylor and as he tried to shout, the blizzard stifled the cry in his throat.

Willis knew the other tent was up-wind and began crawling towards it, dragging the sleeping-bag under him. Drift blinded him. It choked him so that he had to stop every few feet to breathe by ducking his face down and inhaling in the slip-stream. Whenever he looked up, the force of the wind pressed back the flesh on his cheeks, and although he did not know at the time his face was being frost-bitten.

Time was difficult to assess. Willis thought about twenty minutes passed before he encountered Taylor, who was looking for him, shouting into the blizzard. Willis heard one of the shouts on the wind. It was as though somebody had called his name in a dream. He went forward, and there was Taylor only a yard away, crawling on all fours.

Together they inched forward into the numbing blast, crouching heads down in the wind as each frenzied gust struck them and the drift quickly piled up ahead. They could see nothing but the ice grey-flecked darkness, and had no idea where they were.

After some time Taylor began to wonder if they had possibly gone past the other tent. He was about to tell Willis that they should turn back in a detour, when he put his hand on a mound in the snow that suddenly came to life with a snarl. It was Jaikie, one of Worswick's dogs.

"Shut up, you bastard," Taylor shouted.

A moment later it was licking his face with a warm tongue, greeting him delightedly, quite oblivious of the blizzard.

Finding Worswick's team immediately indicated to Taylor the direction of the tent, which was another ten yards farther on, and they continued towards it. They reached the tent, and beat on the walls with their hands, shouting until Kenney untied the entrance and they wriggled in with a rush of drift. As Taylor entered he heard Worswick utter a groan of agony. The giant had toothache.

The four of them spent the rest of the night huddled together in the one tent. Next morning the wind had abated considerably, and they went out to look for the other tent and equipment. Nothing remained and all that they ever recovered was a part of the tent which had been blown down the snow-slope and a fifty-pound box of sledging rations which they found over three miles away.

Taylor's theory to explain the loss of his tent was that one of the bamboo poles had been broken by a piece of flying ice. In support of that he was able to show the pole split across, but the pole could have been broken as the tent was blown up and dashed to the ground. Personally, my belief is that insufficient snow had been piled up round the tent on its skirt flaps. The wind must have got under the tent and lifted it up, and I took that incident as a warning that it is always safer to pile on too much snow than risk putting just enough.

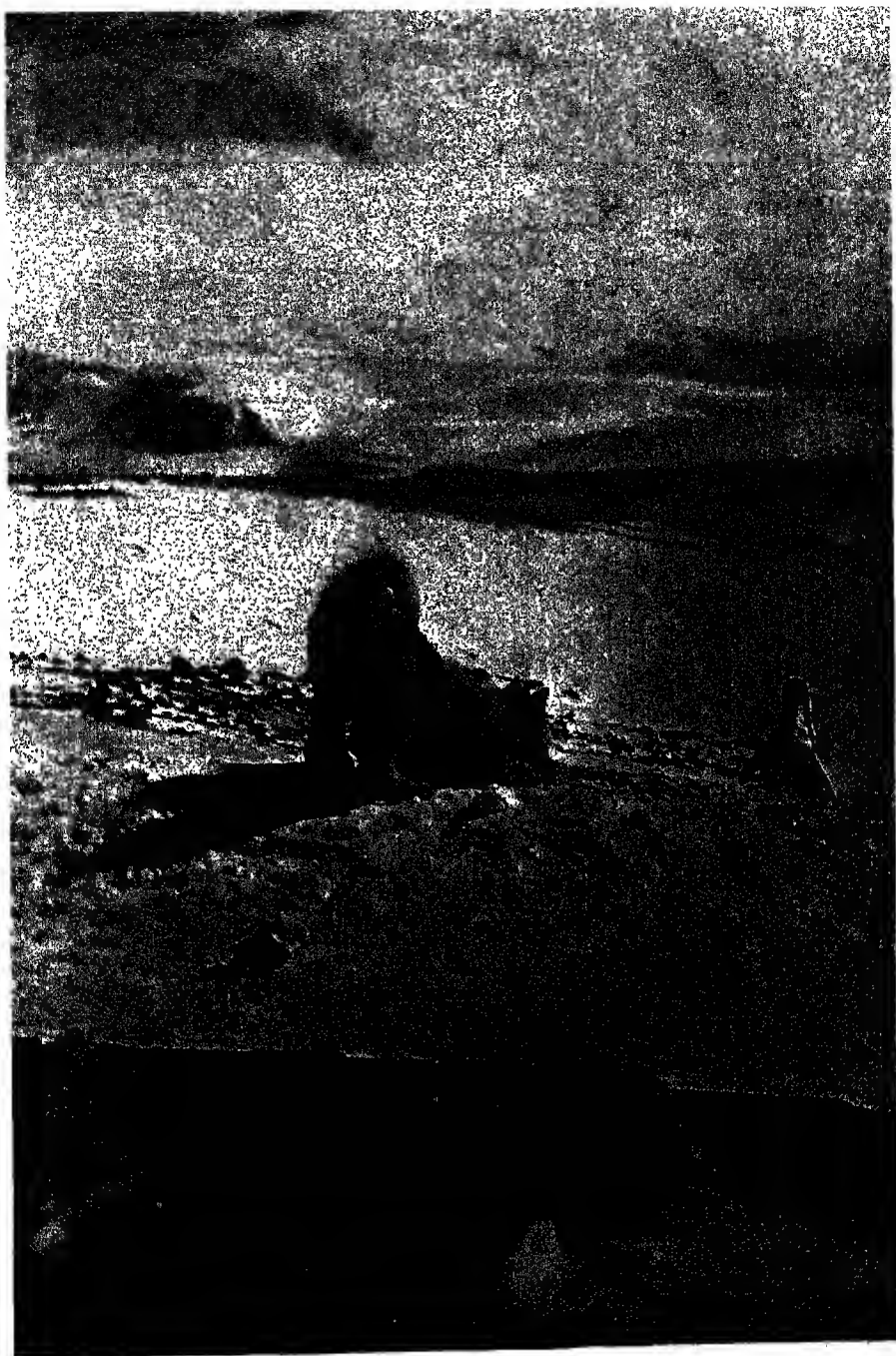
By the end of May we began preparations for the 250-mile depot-laying journey down the Crown Prince Gustav Channel to Cape Longing. It was part of my build-up for the main journey, with the added objective of surveying the north-west coast of James Ross Island. Those selected to undertake it, apart from myself, were Massey, Precious and Leppard, with the Players and the Gangsters as our dog-teams.

Preparations took a week. Route maps were drawn: sledges stripped and reassembled. Camp equipment, traces, met. instruments, medicine bags and wireless sets were checked and new sets of harness were made for both teams. I can still see us grouped round the stove every evening like seamen of old mending sails on a windjammer, puffing at our pipes as we stitched away with our needles and thread and wearing sail-maker's palms.

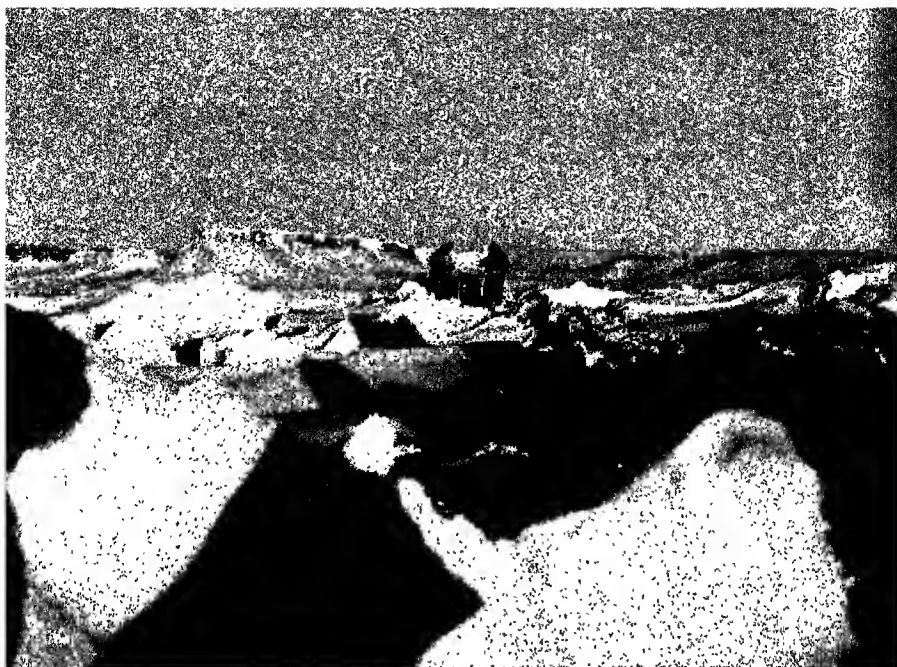
We started out in fine weather on the morning of June 7, Massey and Leppard leaving at eleven o'clock with the Gangsters pulling "Bloody Mary," and Precious and I an hour later with the Players and "Burlington Bertie." The surface was good, and with light sledges we made the seventeen miles to View Point by three that afternoon. We fed the dogs seal, camped on the sea ice near the tide crack and went to have supper with Lewis and Taylor, who were occupying the hut.

Early next morning we set out for Beak Island to pick up our rations, with Taylor and Lewis accompanying us. They were completing the store-hauling with an electrical strain-gauge attached to their sledge, which Taylor was using to test the work output of his team.

We reached the depot on Beak Island by twelve, loaded up with 1,050 pounds on each sledge and, after saying good-bye to Taylor and Lewis, we headed south-west down the Crown Prince Gustav Channel, which is like a glacial valley, roughly five miles wide, bounded on the west by the mainland and on the east by the cliffs of a chain of islands. The southern entrance to the channel is blocked permanently by the Larsen Ice-shelf, with the result that it has become a backwater crowded



"Lance," a three-month-old pup, takes his first look at a penguin. He soon had his ears boxed for being too curious



Leppard and Massey halt for lunch in the brash of the Crown Prince Gustav Channel. The sledges overturned every few yards and progress was slow

(Below) Four seals breathing through a blow-hole in the Crown Prince Gustav Channel. The seals make the holes by gnawing through the ice



with a wide assortment of bergs and brash which never get swept out to sea.

This journey down the Crown Prince Gustav Channel represents the most back-breaking and soul-destroying work I have ever done in my life. There were days when our sledges overturned literally every few yards, and they would have to be unloaded before they could be lifted back on their runners. An advance of a quarter of a mile in any direction, other than the way we had come, was considered an achievement and, at first, our daily runs averaged a little under a mile and a half.

From a distance as we headed south-west from Beak, it looked a little rough, something like an area of concrete blocks put down as an anti-tank obstacle. But no sooner were we in it than both sledges started overturning, and "Burlington Bertie" broke its cow-catcher.

"Not a particularly good start," I observed gloomily to Precious, as we pitched our tent that evening.

"Don't worry, we'll soon be out of it," he said optimistically.

"I hope you're right, but somehow I doubt it."

As I was "inside" man, I wriggled through the entrance and on to an illuminated square of ice, like ground glass, admitting a bluish green luminosity from the sea beneath us. Our camping equipment and rations were handed in to me. I made the tent comfortable and began to prepare our evening meal.

Our basic diet was pemmican, a beef extract made by Bovril, which came in pound blocks, each packaged in an air-tight plastic bag. It was a hard, dark-brown stuff that had to be scraped off the block into the cooking pot. Boiling water was poured on top, dehydrated onions and potatoes added and it was allowed to simmer. We ate it with thickly buttered biscuits, washing it down with cocoa or tea.

Pemmican is satisfying; it has a high calorific content and contains all the vitamins necessary to keep the Antarctic traveller nourished and healthy. Theoretically it may have been the ideal sledging food, since it packed a large number of

calories into a relatively light weight, but it was not particularly appetizing and, night after night on a long journey, it became very monotonous indeed. There was also a small tin of bacon which we had as a change once in ten days, but I do think some calories could very well have been sacrificed for the morale value of a more varied diet. The ration boxes contained 120 bars of chocolate, or six a day, and these were usually eaten during the midday halt or on the march.

The alarm clock roused us at eight next morning. Precious stopped it and lit the candle, and as the flame flickered and steadied I saw the interior of the tent, with our clothes hanging from the top, and our sleeping-bags all white with frost. He started the Primus, exposing as little of himself as possible in the act. He put on a pot of snow for an early morning mug of tea, and slid back under the hood of his sleeping-bag to wait until the pot boiled. As the heat rose from the Primus, our frozen garments began to steam and thaw out.

Breakfast that day and every succeeding morning of the journey consisted of Quaker Oats, with plenty of sugar. Sometimes we added a peppermint-tasting sweet called Kendal mint, which left a pleasant fresh taste in the mouth. We ate the porridge, with thickly buttered biscuits, and rounded off the meal with another mug of tea and a satisfying pipe of tobacco.

For our "handle-bar" lunch, Precious prepared a vacuum flask of coffee, taking care that the screw-top was thoroughly dry before putting it on, as any moisture freezing on the threads could make it impossible to remove. He buttered biscuits, smearing Marmite on them, and wrapped the snack in a piece of cloth to put in our sledging-bag on the handle-bars. Butter was a very necessary part of our diet. The ration was three pounds each for ten days, and still we craved for it, particularly towards the end of a journey.

The sun was rising over the islands as we emerged from our tent at ten-thirty that morning. The cliffs of Graham Land were lighting up and the bluish haze and purple shadows were rapidly dissolving from the silent icescape around us. Five

lonely shag flighted southwards over us as we climbed a small berg nearby to look at the way ahead. What we saw was the depressing vista of the brash extending on either side of the centre islands of the channel for practically twenty miles.

Now that we were in it, the brash was far worse than it had appeared from the outside. When we came down from the berg, it was difficult to pick a route for more than a few yards ahead. It was the sort of view a ploughed field must present to an ant.

We repaired the broken cow-catcher as best we could, by lashing the broken ends together, and we started out with Massey and Leppard going ahead. Half a mile out of camp we struck a small pool a hundred yards long by twenty-five yards wide with a colony of crabeaters lying on the ice round it and one lonely paddy. We detoured and continued southwards for about four miles, passing Tail and Egg Islands. Then, beside Red Island, "Burlington Bertie" suddenly overturned in a wind scoop, breaking her cow-catcher beyond repair. It was about three o'clock now and getting dark so I sent Massey and Leppard on to pick a camp site while Precious and I unloaded and righted our sledge. We caught them up after a while and the dogs were fed and the tents pitched.

I was "outside" man that night and almost asleep when I heard our dogs fighting. I cursed them as I climbed out of the tent in my Long Johns and belaboured them for being so damned inconsiderate. The moon was up, very bright and large in a clear sky, with the brash shapes all round me reflecting a weird supernatural luminosity. Wraiths of gossamer cloud clung to the islands, seeping down to the silver mist that lay like motionless ectoplasm over the strange world. The scene possessed a haunting dream-like quality, yet there was something about it that was uneasy and baffling, and I felt curious. The silence was so intense that my ears picked up a barely audible whisper. It was a faint movement of air through the labyrinth on that still night, and I realized that the strangeness was due to there being no wind. Then, as a puff of air touched

me, the cold gripped me through my underwear, and I hurried back to the tent shivering.

The tent flapping angrily woke me next morning. The wind was blowing about thirty knots and visibility was so bad that I decided we should lie up all day rather than tackle the brash in such conditions. The wind dropped the following day, and we continued; but the brash got steadily worse, with both sledges overturning every hundred yards or so. By the time we camped we had covered no more than one and a half miles. Next day, June 12, we advanced a further three miles, but after yet another day's punishing travel we discovered to our great disappointment that "Bloody Mary" had damaged all her bridges.

There was no alternative but to patch up the sledge as best we could and send Massey and Leppard back to View Point to exchange it for "Ice Cold Katie" which Taylor was using for his tests. It would mean the loss of four or five valuable days to our expedition, but we could not possibly risk taking a load any farther on the damaged sledge. The arrangement would of course inconvenience Taylor, but he had better repair facilities at View Point; besides, he was only seventeen miles from base.

Massey and Leppard set out for View Point the following morning, carrying the barest essentials, while Precious and I settled down to pass the time as best we could. We tried reconnoitring a route, and walked through the brash, climbing a berg to get a better view down the channel.

The prospect was not encouraging. The brash seemed to stretch away south to where a chain of large tabular bergs were strung across our path from James Ross Island to the coast of Graham Land, and from where we stood there appeared to be no passage past them.

"Hell," I said, "will we ever get out of this bloody brash?"

"It looks pretty bad," Precious agreed.

"Why do we have to muck about in here when a helicopter could lay a string of depots right down the channel?" I demanded. "The *Biscoe* could bring a helicopter down on her first

call, and take it away on her second call. In that time it could be used to lift all the stuff that's needed for the season's journeys, and we could get twice the amount of surveying done."

Precious eagerly responded to the idea. Between us we worked out the details of a supply operation, and cursed the F.I.D.S. administration for not having had the gumption to think of it before.

It was two o'clock when we returned from our recce. Within the last couple of hours the temperature had risen from about -10° F. to $+38^{\circ}$ F. so that the brash was now weeping and the snow was slush beneath our feet.

Presently the wind increased and was soon up to gale force. Then it was past it, and by the time darkness fell gusts of seventy and eighty knots were hitting us mercilessly. Our tent was flapping alarmingly, and although we had shovelled plenty of snow and piled blocks of ice round the skirt flaps, I was afraid the wet snow would not be able to hold it. I thought of Taylor and Willis when their tent blew away on Summit Pass, but at least they had another tent to shelter in a few yards away. We had no second line of defence.

We had supper and lay in our bags, unable to sleep for the flapping of the tent. The gale seemed to increase, and at 4.30, at the height of it, the dogs started fighting. I went outside, to find that they had pulled the forward picket out of the melting ice and had overturned the sledge in the mêlée that followed. In driving snow I had to disentangle them and when I crawled back into the tent half an hour later Precious had brewed a mug of tea. It was the only cheering moment of that long unhappy night.

I can think of only one less welcome obligation in a blizzard than breaking up a dog-fight—answering a call of nature. If you faced the wind the drift got in your eyes, and if you turned the other way it got in your trousers. You had your choice and nobody lingered over it, save the "inside" man in the morning when camp was struck. After everything had

been passed to the "outside" man to load on the sledge, it was the "inside" chap's privilege to take advantage of the security of the tent.

When daylight came after the night of storm, the wind had died down and the temperature had dropped to 6° F., so that the tent was now pitched on what looked like the ice-rink at the Empress Hall, with the skirt flaps frozen deep in the ice.

We spent the morning drying out our sleeping-bags and sheepskin rugs over the Primus, and moved the dogs to a new and better site. Not satisfied with our recce the day before, we climbed a second berg and, from the top, 150 feet up, we chose what we hoped would be the best route out of the brash, which seemed to continue for at least another twenty miles.

We lay up, playing cards and sleeping most of the next day, save for another climb up the berg. We had tried each night to contact base and View Point by radio, without success. All we picked up on these occasions was Moscow putting out Communist propaganda in a marked American accent.

"For God's sake, turn it off," I would tell Precious. "I came down to the Antarctic to get away from all that."

Next day, June 16, found us still waiting. We saw mother-of-pearl clouds high above the peninsula in the afternoon, and killed a crabeater one and a half miles due east. The dogs had part of it, and we fried the liver and onions for our supper that night.

Early the following morning we were setting out to put a red depot flag on a prominent bergy bit as a guide for the other two, when we spotted them a mile away to the north-west and walked out to meet them. It was lunch-time when we got back to our camp, and too late to think of continuing our journey, with only a couple of hours of daylight left, so we all climbed the berg again and after a lengthy discussion agreed that probably the best course would be to head for the coast of James Ross Island and hope for a better surface in the lee of its vertical red sandstone cliffs. As we were coming down from the berg a giant petrel flew past, stroking the air most gracefully with

its wings. It seemed to prove my point about the helicopter.

On June 18, after a hold-up of five days, we continued the journey southwards, but accomplished only one and a half miles in about five hours. We were now up to the first of the big tabular bergs, and before continuing next morning Leppard and I climbed it to make a recce. There appeared to be a possible route to the south-east in the direction of James Ross Island, and coming down we followed it for a short distance to see if it would be suitable for the sledges.

We found that the route improved the nearer we got to the island, so after a while we turned and retraced our steps. We must have got to within a mile and a half of camp, when I scrambled up on to a low ridge and suddenly saw an enormous leopard seal on a flat area of ice just below me.

It reared itself up, looking at us fiercely and expelled its breath in an open-mouthed snarling hiss. It was almost thirteen feet long, beautifully stream-lined, with a sleek pointed head and long terrifying teeth. Normally we would kill a leopard seal by shooting it from a very safe distance, but now our only weapons were ice-axes.

I jumped down and faced it as it hissed again and went down on its flippers. It bared its teeth and began swaying its head from side to side. Twice I went forward and struck at its head with my ice-axe, but missed each time. I could see that it was going to come at me.

Out of the water a leopard moves differently from other seals. While a crabeater or a Weddell pulls itself forward with both flippers together, bringing its tail up under it, in a series of flopping caterpillar-like movements, a leopard uses its flippers alternately to propel itself with a quick snake-like movement.

Now it rushed at me with a hiss, and I hit it as hard as I could, driving the pick end of the ice-axe into its skull. A moment later I felt the ice-axe wrenched out of my hand as the seal shook its head in a desperate attempt to get it out, and spouts of crimson blood began to stain the snow.

It was almost silent in its mortal agony. Its movements be-

came weaker and weaker until Leppard ran up with a knife and cut the jugular vein in its throat. Its head sank down on the ice with the blood welling out, and it seemed to relax. It gave one last sigh, the back bent in a final spasm, and finally it lay dead.

When later we gutted it we found the stomach quite empty. Leopard seals are not gregarious animals, but what, we asked ourselves, was a lone leopard doing in the middle of the Crown Prince Gustav Channel? We had known them to inhabit small pools in the tide cracks in the winter, but there did not appear to be a pool anywhere for several miles. We could only guess at the answer; that the sea had frozen very quickly, leaving it high and dry.

Leppard and I returned to camp, and we set out together, making for the seal. That mile and a half took us up to nearly three o'clock, so we decided to camp near the seal and let the dogs have a good feed.

We started late next day as Leppard was surveying with the plane table, fixing the height and position of Lachman Crags. After climbing yet another berg, I decided that our best course lay due east from here, and we started out at 2.30 with Leppard and I leading the way. As he wanted to continue his survey, we camped an hour later, having made 2.3 miles, for which we congratulated ourselves.

However, we could now see the end of the brash, and our spirits were high. We were clear of it by two o'clock the following afternoon and, as it was June 21, and Mid-winter Day, we celebrated by opening our "perks" box, and the four of us feasted together on noodle soup, pemmican hash, Kendal mint, chocolate biscuits, coffee and a cigar each. We little realized, as we yarned and listened to news on the radio, that a short distance away was the spectacle of a strange and baffling mystery of the Antarctic.

There was something sinister about that morning. The sky was overcast, the channel gloomy. We were loading up our

sledges, and I looked southward to see how far we could hope to get before dirty weather hit us and we had to go to ground. The ice stretched away flat to Carlson Island in the distance, with the promontory of Cape Lagrelus behind it on the left. About 500 yards away jets of steam appeared to be rising from the ice. Presently I saw a large blunt snout-like shape push up about seven feet above the surface, and then there was another jet.

Soon we were ready to move off. I pointed out what I had seen to the others, and we set out towards the spot. As we got near enough we saw that there was a hole in the ice. I stopped my sledge and walked to the edge of the pool. As I looked down into the dark water something seemed to be taking shape; *I bent over further, there was a sudden roar and the huge head of a whale shot upwards through the hole, towering above me. I gazed at it too awestruck to do anything but stand and stare. Suddenly, I was drenched with spray as it exhaled with a deep sigh and slowly slid back into the water. It was like the last sad moments of a sinking ship, but in that brief second I had seen its eyes and they were the most intelligent I have ever seen in any animal.*

Like the leopard seal, the whale posed a curious question. What was it doing in the Crown Prince Gustav Channel in mid-winter? Whales need open water and have to come up at least every half-hour, and normally every few minutes in order to breathe. But it was all of seventy miles from here to the open sea.

We photographed the whale which we later identified as a Lesser Rorqual, and continued towards Carlson Island with Leppard carrying out a running survey. Soon we passed another whale blow-hole, then another; until presently we were in an area where there were about twenty blow-holes, from four to ten feet in diameter. Some were used by more than one whale—in one I counted four snouts squeezed up through an aperture about eight feet square. The thickness of the ice round the holes varied from about one and a half to two and a

half feet, but so beautifully controlled were the movements of these huge but gentle creatures, that never once did I see them touch the edge.

At about 2.30 when we were approximately half a mile north of Carlson Island, I was driving the second sledge when I saw Leppard hold up his hand, I repeated the signal and we stopped. Then he pointed. Ahead of us I saw open water stretching across our route from Pitt Point on the mainland to Carlson, and then south-east to Cape Lagrelus.

As we went nearer we saw that there were three leads or pools, the largest of which was about six square miles in area, the smallest about 300 yards long by fifty yards wide. In these pools were a large number of whales—at a rough estimate, a couple of hundred. They were mainly Rorquals, but also quite a lot of Killers; and I noticed a few of the rarer bottle-nosed whales. Lying around on the ice were thousands of crabeaters.

The sight was awe-inspiring. We were a little apprehensive at first as we approached, and the breathing of the whales became louder and louder. Each blow was like the sigh of escaping steam from a railway engine, so that when we got close enough the place sounded like a crowded marshalling-yard. Some of the whales were cruising about on the surface of the leaden black water, others would come up to blow and dive again, but they were all so unhurried and natural in their movements that presently we felt reassured. It was as if we had come to an oasis full of life and sound in the silent, sterile Antarctic desert.

The explanation, we concluded, was that the animals had come into the Crown Prince Gustav Channel to feed and had been trapped by the sudden forming of the sea ice. They had been coralled into these pools, and as far as we could make out their survival depended on their keeping them open, but at the time we were not struck by anything unusual about their behaviour.

As we would have to change course and possibly skirt the edge of James Ross Island to get past these leads, we decided to

camp. It was not a good spot because our sleep was disturbed by the bubbling and snorting of seals through a small blow-hole a few feet away from our tent. Then at 4.30 in the morning a wind sprang up without warning, and we were subjected to spasmodic gusts of gale force striking at two- or three-minute intervals, with a calm between each gust, as though the wind was pausing to get its breath back. As I lay half asleep, I felt uneasy; the brash, the broken sledge, the open water, the whales, and now the blizzard, all seemed to serve as a warning.

Bad weather kept us confined to our tents for the next two days. Sunday, June 26, dawned fine and clear with exquisite mother-of-pearl cloud high over Lachman Crags to our north. The snow on the ice was soft and sticky with salt which had seeped through from the sea, making it heavy going for the dogs; however, by one-thirty we were under the majestic shape of Cape Lagrelius, like the bow of a massive ship breaking through the ice.

A little to the west was yet another area of open water, two miles long and half a mile wide, and this was also teeming with whales. On the ice we could see fat black Weddell seals lying alongside silver-grey shapes of crabeaters.

Suddenly I saw a whale jump clean out of the water like a gigantic salmon. A moment later another, a little nearer to us, did the same. Then a third went up. We immediately got out our cameras hoping to photograph a jumping whale, but none obliged.

We were getting used to the sight of whales, but were certainly not prepared for what we encountered in the next pool, a short distance away. It was a small pool, perhaps a hundred yards long by fifty yards wide, and in it were about twelve Adèlie penguins, four crabeaters, one leopard seal, and occasionally two Killer whales, all swimming about together in perfect harmony. Such a scene in Hope Bay would have been unbelievable.

Then, as we watched, a pack of five Killers appeared from under the ice less than six feet from where we stood. There was

no mistaking them. They were certainly Killers, yet they went porpoising through the group of seals and penguins, without harming them, and we saw a swirl of glistening backs and the flash of dorsal fins as they dived under the ice on the other side.

We looked at each other in amazement. Had we seen aright? Up to that moment we had believed that Killers attacked whatever creature they saw in the water with terrifying ferocity. We had been warned that if Killers appeared when we were out in a boat, we should make for the land or climb on to the nearest iceberg. But here they were acting quite contrary to their sinister reputation. What was the explanation? We did not know, but it did not stop us guessing. As Massey pointed out, this discovery of ours was going to upset the marine biologists.

"We'll need to take a lot of photographs to substantiate our story or nobody will believe us," he said.

We camped under the lee of the cliffs as the sun was setting over the peninsula, turning the mist that lay across the channel into beautiful pastel pink. It rolled and billowed southward before the gentle wind like an incandescent smoke-screen.

This was indeed an enchanted place. The air was full of echoes, our voices being thrown back at us from the ice-cliffs. The dogs were fascinated. They began growling, listening to the echo and growling again. Pluto, my biggest dog, became particularly belligerent and excited.

From that point the snow surface was perfect and by three o'clock next day we made Cape Obelisk, on the southwest corner of James Ross, where the crevassed pressure ridges of the Larsen Ice-shelf rose seventy feet before us, barring our route due south towards Cape Longing, which was now a blue outline in the distance.

After camping for the night we turned east, skirting the ice-shelf for three miles, to a point where it sloped gently down to the sea ice and the sledges could be taken up.

As we climbed on to the glacial ice of the shelf, we en-

countered another Antarctic riddle. This was the presence of a number of black boulders lying about in the snow, varying in size from a brick to a car but without a vestige of snow covering them. Obviously the snow that had fallen on them had melted, possibly because they retained some heat from the sun during the day. Yet, on the other hand, they had not caused any melting in the ice below them. We had at first mistaken them for seals, since they lay completely exposed on the surface. They looked as though they had just been put there, but they must have lain on the shelf-ice for hundreds of years. They could not have been blown into that spot, as some were too big, and the nearest land was over three miles away. One possible explanation is that they had been brought down from a glacier and carried to their present position by the barely perceptible movement of the ice-shelf. But why were they still exposed? The secret remains locked in the heart of the Crown Prince Gustav Channel.

We camped for the night, and continued towards our objective twenty-five miles away, making fifteen miles in the best day's sledging so far, though the temperature dropped to the minus thirties and we all suffered from frost-bitten noses, cheeks and ears.

By two o'clock next day we could see Longing Col ahead of us in a wide saddle running out from the mainland to the tip of the cape. Soon we began the gradual climb to the summit of the col. We reached the top, and there, less than a mile away, was a tattered red pennant and a small pile of boxes. We had reached our objective, the Longing Col Depot. Ahead of us lay the desolate vista of the cliffs of Graham Land and the ice-shelf stretching for miles and miles into the grey south. This was the sort of country we had to explore on the main journey. The prospect was not encouraging.

We spent the next day catching up with minor repairs, and checking the depot. It consisted of three boxes of man-rations, fifteen boxes of dog pemmican and eight gallons of paraffin—enough for four men and two dog teams for fifteen

days. We added our contribution which, after all our efforts, merely increased the depot by another twenty days' supply. It looked a pathetic little mound in such a vast wilderness. A helicopter could have delivered that and returned to base in three hours.

Precious and I were now down to our last three candles, so we made a paraffin lamp out of a tobacco-tin with a piece of string for a wick. It smoked so much that the following morning we looked like a couple of bearded coal-miners after a shift.

As I untied the sleeve entrance of our tent, Pluto, the big clown of our team, put his head into the tent and said: "Woof!" Having unhooked himself from his trace, he had spent the night curled up on our tent skirt flap.

"He is a good dog, isn't he? Never any trouble," Precious said. "Here, Pluto boy, have a biscuit." Pluto gently took the biscuit in his big mouth, looked at us with affection and gratitude, and began to chew it. "Go and lie down and don't make a row, there's a good fellow."

"Woof!" Pluto replied, and went back and curled up in the snow by his trace.

"Damn good dog, old Pluto—never any trouble," Precious repeated.

A little later I went outside to find that Pluto had not been as guiltless as his expression of lugubrious innocence suggested. During the night he had torn off the end of a three-ply box containing the dog pemmican and eaten five blocks.

"That's your good dog for you!" I told Precious. "After eating five pounds of pemmican, the thieving bastard has the impudence to come scrounging biscuits." However, Pluto was very sick and sorry for himself all that day.

Bad weather held us up yet another day at Longing Col, and on Saturday, July 2, we began the return journey with a reshuffle of sledging partners. Massey and I now led with the Players. The surface was good and hard, but the temperature

was falling rapidly, and the slightest wind made travelling most uncomfortable. That night we experienced sixty-seven degrees of frost, the coldest night of the journey so far, and I lay shivering in my bag, unable to sleep, as there was not sufficient paraffin left to keep the Primus burning.

We picked up our old tracks as the sun rose next morning against a back-cloth of scarlet and orange over the Weddell Sea on our right. We made good time, but on reaching the south corner of Persson Island ran into a high wind. The drift reduced the visibility to ten yards, but this proved to be a very local blizzard, and by the time we reached Cape Obelisk at four o'clock we had left it behind us. We camped after covering just over fifteen miles.

The dogs seemed listless, and required more and more driving as we continued the journey northwards, although the loads were now reduced to a bare 550 pounds and the surface was good. However, we reached Cape Lagrelius by four o'clock that afternoon.

When we made Carlson Island next day we parted company with Leppard and Precious, who continued surveying up the east side of the channel, in the lee of James Ross Island. Meanwhile, Massey and I turned and made for the west side. I wanted to follow the coast of the peninsula, hoping we might possibly find a better route through the brash.

We were now back in the area of the pools. There appeared to be no change in the behaviour of the whale population, but the pools had definitely shrunk.

That afternoon, before we camped, we killed a seal. Then to save time and trouble feeding the dogs, we let them off the trace to help themselves. The method worked very well and strangely enough there were no fights. When they had eaten their fill each came back to its position on the trace, covered in blood and looking somewhat bewildered.

At ten o'clock that night a particularly violent blizzard struck, shaking and flapping our tent intermittently for the next twenty hours. Our paraffin supply was running very low

so, when we started out again on Thursday, July 7, we worked hard to make good time through the brash.

Heavy snowfalls and high winds during the past two weeks had improved conditions. But it was Massey's going on ahead and picking the best possible route that enabled us to make seven miles before we camped just north of Red Island. As he forged ahead courageously in the semi-darkness late that day, I began to realize the truly sterling qualities of the man.

Next day we covered twenty-two miles, and the day after we reached View Point at 11.30 a.m., to find Mander and Clarke in occupation. A few days later we were back at base, with our baffling story of the pools and the unaccountable behaviour of the creatures in them. A detailed report was cabled to Port Stanley, and back came a reply asking for more specific details of our observations. The Scientific Bureau were interested. Indeed, as I learned later, our discovery *had* caused something of a stir in London.

When I sent the additional information I asked for an explanation, but none of the experts in London was prepared to offer one. Interminable discussions had begun at base, as we explored every possible clue to the mystery. An astonishing assortment of theories was put forward to explain, not only the remarkable restraint on the part of the Killer whales, but the total lack of fear among the penguins and seals. As far as I can remember, the theories grew more far-fetched as the weeks passed.

Anyway, in August four of us would be returning to Crown Prince Gustav Channel on the main journey, and perhaps we would find the answer then. When the time came we discovered the issue complicated by yet another mystery. The whole affair of the pools was to become curiouser and curiouser.

Chapter Nine

HOPE BAY lies at the confluence of two distinct weather areas—the Weddell Sea and Bellingshausen Sea. In July we got the worst of both. It was not excessively cold for the Antarctic—the lowest temperature recorded was -28° F., but we experienced extraordinary variations of temperature. Changes of twenty degrees in almost as many minutes were commonplace. One day I saw the temperature rise from -10° F. to $+50^{\circ}$ F. It was fine, so we took off our clothes and sun-bathed, and I remember Joe Lewis getting a touch of sun-stroke—in the middle of the Antarctic winter!

Fine days were very rare in winter. It was generally overcast with the temperature well below zero and a blizzard raging. The wind was almost a constant feature of Hope Bay and we got so used to the howling that if it suddenly stopped at night we would wake up. Blizzards were regular, some of them lasting for a week or longer, with wind speeds at times exceeding 100 knots. At the height of one of these storms we recorded gusts of up to 120 knots at about two a minute for five hours. One gust reached 146 knots, or 166 miles an hour. To get an idea of what these wind speeds are like, compare them with a storm in England where wind of gale force (thirty-four knots or thirty-nine miles an hour) will bring down trees and do considerable damage.

What we had particularly to guard against was the Hope Bay weather affecting our morale. Even after we became acclimatized to the Antarctic, we found that the hut got pretty cold in sub-zero temperatures. The galley and the bathroom stayed quite warm. In the ward room it was pleasant near the stoves but uncomfortable away from them—at night, when the fires were damped down, it was below freezing. There were electric

fires in some of the other rooms, but you needed a duffle-coat to work in them for any length of time.

Being cooped up during a prolonged blizzard, with the strain of mounting tensions, began to wear and tear on one's ebbing powers of restraint. We realized, of course, the necessity for keeping a check on our impulses, prejudices and antipathies. I saw men getting on each other's nerves, but also saw remarkable efforts at self-control.

Not until I went to the Antarctic did I really appreciate the value of privacy. At base there was none—you never got away from the other men in the hut. I used to think it would have been better if we had each a cubicle, if only for the luxury of escaping for a few hours from the mannerisms and the clichés of thought and speech of the others. But I realize now that our dormitory system was psychologically safer, because if a man felt unwanted or unpopular and started shutting himself off from his companions, he might find it harder and harder to re-enter the communal life. The way we lived it was difficult for this to happen.

At first I hated it, and I am sure the others did; but soon we adapted ourselves, and came to accept each other. We learned tolerance and consciously practised it, and steadily a new tone developed.

A great help to all of us was a suggestion of Massey's. One day he said: "You know, Bill, if anybody wants to get anything off his chest I am always there to listen." By "there" he meant the surgery, where he would be found puffing at his pipe and working quietly. He always had a welcoming grin for everybody.

People took to going to him with their personal problems. He was a big man, physically and mentally, and they always felt better for having had "a word with Massey."

On the way down to the Antarctic, he and I had agreed that we would not be over-friendly with each other. I did not want the rest of the base to feel that the leader and deputy leader belonged to one camp, and the rest had either to be in it

or on the outside. We kept apart, so that nobody felt, when he confided in Massey, that the matter would ever get to my ear. Men had their grumbles, and I am sure many had reason to complain about me; but the only inkling I ever got of this was when Massey might say: "So and so seems to be getting more than his share of the dirty jobs."

I would then explain how this had possibly been unavoidable, but it was not easy to satisfy him. His attitude was that of an energetic M.P. who saw to it that his constituents were justly treated. He was the guardian of the rights of individual base members, and he helped me to ensure a fair distribution of chores and "perks" alike. At the same time, if somebody had a grouse which he thought was not really justified, he did not hesitate to point out to him where he was wrong.

He was a good psychologist, who varied his approach to suit the individual who went to him with a personal problem. I remember once saying:

"It's this bloody seal-gutting—I just can't get used to it. It really makes me feel quite ill."

He sat back and laughed heartily. "Heavens, Bill, there's nothing to it. I will have to give you a lesson."

The next time we killed a seal he took out his knife and as I stood and watched he began to dissect it.

"You make an extended incision like so," he began. Then he went through the familiar gutting routine, describing it in medical terms, like a surgeon giving a commentary on an operation to a class of students.

Somehow, Massey's surgical approach to gutting seal helped me and the job became less and less of a revolting nightmare. I became so used to it that later I did not turn a hair in helping to carry out post-mortems on seals which were believed to have died from a mysterious epidemic that wiped out thousands in the Crown Prince Gustav Channel.

I tried to discourage any close friendships developing between two men; for the simple reason that if they fell out they might go to the other extreme and become enemies. It was

better, I felt, for everybody to steer a smooth course on the best possible terms with all the other men at base. In this way we gradually became a sort of family with ties of loyalty and affection, and a spirit in which each member's shortcomings were overlooked or excused rather than criticized, and his virtues and skills somewhat over-praised.

The bond between us increased as we shared a common way of life. We endured the same hardships, experienced similar dangers, laughed at private jokes that would have sounded childish to an outsider. We were all enthusiastic about the Antarctic, and we were proud of the work we were doing.

One effect of our work was that it canalized our interests. It was noticeable, after a while, how the pin-ups above most of our bunks changed from bathing beauties to English scenes and pictures of flowers cut out of seed catalogues. On the whole, we ceased to think about missing feminine company. Hard work and planning our journeys took the place of that.

The Argentines, on the other hand, never acquired our kind of monastic detachment. Women were always on their minds, although that may have been because they were so much nearer home than we were. There was an arrangement whereby they could talk to their wives and girl friends by radio-telephone but, instead of helping, this seemed to make the separation all the more difficult.

Our own contact with the outside world was by cable—after all, Hope Bay offered postal facilities. In addition there was a letter-telegram service, the messages being wirelessly to Port Stanley, and sent on by airmail. We were allowed a hundred words a month free, and charged a penny a word after that, and relatives who wanted to write to us could send letter-telegrams at a penny a word, by mailing the message with a postal order to cover the amount, to the post office in Stanley.

The B.B.C. remembered us. We had our own programme, "F.I.D.S. Half-hour," on the General Overseas Service, from April to September, with request music, and personal messages from relatives who were introduced by Peter King. We

liked "F.I.D.S. Half-hour," except that the personal messages tended to be a little embarrassing. The man for whom a message was intended felt rather like a boy at school dreading the sort of show his parents will put up at prize-giving, while for others listening-in it was as embarrassing as being caught eavesdropping.

Still, the programme meant a lot to us on the bases, and, to show our appreciation, we sent Peter King a bottle of whisky by cabling a supplier in London. In the next programme we heard him say: "Thanks, Hope Bay, for the strength to continue!"

People have asked me how we managed to kill the long dreary hours of winter on an Antarctic base. We listened occasionally to the radio or the gramophone, we played a little poker or cribbage and we had a vague sort of darts league. But actually there was very little time to spare, and we often worked a twelve-hour day for weeks on end.

In addition to their normal jobs, most people had special responsibilities. Tait was in charge of the workshop and building materials; Leppard, the sledge workshop; Kenney, the library; Lewis, the dark-room; Worswick, the chandlery; Taylor, dog equipment; Precious, the rations; and Massey, the canteen. Massey made the free issue of chocolate, tobacco and drink on Saturday after the week-end "scrub-out" of the hut had been completed.

Mentally and emotionally the most exhausting job at base was cooking—and the duty cook of the week was forgiven if he showed any temperament. He began on a Saturday night when the retiring cook handed him his symbol of office, an alarm-clock. The alarm was set to wake the new cook at 7.30, when the first thing he did was to check the cooker to make sure it was going well, and to make tea, remembering those who took sugar and how many lumps, and those who did not.

It was a lie-in for everybody on Sunday morning, so breakfast presented no problems. People helped themselves to cereal and fried bacon or spam, which was kept hot in the oven. For

the rest of the week the cook was kept pretty busy trying to make the tinned or dried foods interesting for eleven other men with Antarctic appetites. On top of the three large meals he gave them, not including elevenses and a pretty comprehensive afternoon tea, they still needed something to keep themselves going for the night, and would drift into the galley round ten o'clock and start frying penguins' eggs or preparing a sandwich.

There were cooks, like Taylor, who themselves were not particularly interested in food, and regarded the duty as a week wasted so far as their scientific research was concerned. Doctor Fuchs, I believe, belonged to this category—I was told by a man who had been with him at Marguerite Bay that his efforts in the galley were so unpalatable the other base members excused him permanently from all cooking duties! There were inspired cooks, like Joe Lewis, who would serve dishes like chopped penguin breasts stewed in rough Argentine wine. He was also a friend of one of the Argentine cooks, so that during Joe's week we would have plenty of roast beef or lamb. There were cooks who would walk into the galley on Sunday morning, check their rations, and go through their week confidently, like Tait. And there were cooks like myself, who tried desperately hard but were always apprehensive of the results.

I remember approaching my first week's cooking with increasing nervousness. Cunningly I fixed it so that I had two of the most experienced cooks to support me as "gash" hands, but they had opposing ideas about many things, including the baking of bread, and I was given a lot of conflicting advice. I found myself anxiously watching people's faces as they ate and, if any of them hadn't finished his helping, demanding to know why. The excuse was invariably that a man was not particularly hungry but it was an accepted thing that nobody criticized the cook. I frequently abused my position as base leader by arranging for as many people as possible to be out sledging during my week in the galley. It suited everyone—I

didn't have to cook for them and they didn't have to eat my efforts.

All things considered, the morale at Hope Bay was very high even for an Antarctic base. We were depressed occasionally, when the weather and the darkness stretched our nerves to the utmost, when administrative directives came from Port Stanley which appeared to be thoroughly inconsiderate, and the base routine seemed endless. Moods were infectious, so that one man sulking would tend to make the others a bit testy. If anybody had bad news we all became depressed in sympathy, for it was at such times that the isolation of the Antarctic was hardest to bear. On the other hand, morale went up when somebody received good news from home, or the base was given a pat on the back from Port Stanley, or everybody had a bag of mail on the arrival of a ship.

It was not the peaks or troughs of morale that mattered so much as the general level, and this was good with us because we always had plenty to do. If there were occasional difficulties it was because men were enthusiastic, perhaps at times too much so.

My own problems as base leader were solved as soon as I had acquired sufficient experience to know what I was talking about. There had been some clashes of personality in the beginning, when I had started insisting on things being done the way I wanted. However, once I had demonstrated that I was prepared to accept responsibility for my decisions, I had every man behind me. I could not have wished for a more loyal and conscientious team.

We were fortunate in our neighbours, with whom we stayed on cordial terms, with a certain amount of reciprocal entertaining, and of course open house at both bases during the weekends. Some of us might go down to one of their huts on a Saturday evening, and a few of their men usually came up to ours. After we had seen each of their three somewhat dated

films several times, we lost interest, which explains why only Worswick and Clarke accepted a special invitation to a film show one Sunday night in the summer. They returned with the news that they had seen an entirely different film, one made several years ago in Italy, in which a well-known continental star undressed and walked around in the nude, as Worswick testified, "for several minutes."

The rest of us were most envious, and for the next three Sundays we all trooped down to the Argentines for their weekly film show, in the hope of seeing the Italian film but without any such luck. After we had sat through the repertoire of the old familiar films we enquired about the Italian one, to be told that there was a strong demand for it on board the relief ships. It had, alas, been taken away by the ice-breaker.

Our mutual exchange of gifts with the Argentines was greatly appreciated by both sides. They liked our pickles, curry powder, tea, jams, tinned spaghetti and occasionally a bottle of Scotch; and we always welcomed the chilled mutton and beef from their refrigerator hut, with its donkey-engine that, believe it or not, chugged away all through the Antarctic winter.

I had no political embarrassments to cope with, as Major Moreno, after his first attempt, did not try again to discover my plans: nor did he make any territorial claims for the Argentine. But he did keep pestering me for a protest—I think he wanted to show his Government how assertive he had been. To satisfy him, I wrote out a protest for every Argentine hut and refuge in my area, nine in all, and handed them to him. He was delighted, and we drank to international friendship.

I liked the Argentines. They were a bunch of easy-going good-hearted fellows, who had only come to the Antarctic because of a handsome allowance over and above the normal rate of pay and because they usually got promoted on their return home. Despite these inducements, however, a year was enough for any of them. They thought some of us were crazy to want to stay on in Hope Bay.

Their morale was considerably influenced by events in the

Argentina that winter. Except for one or two men, both bases appeared to be anti-Peron, so when the news of the revolution came through in June they reacted by rushing out and breaking a black plaster bust of Eva Peron that stood on a concrete block near their national flag.

The next we heard was that the revolution had been abortive. Peron was still in power, which meant that some very worried Argentines were wondering how they were going to explain the damage to his wife's bust when the base was inspected the following spring. Fortunately for them, the second revolution in September was successful, and the morale of our Argentines immediately went right up.

Early in August I announced the names of those who were to go on the main journey. Leppard was the obvious choice as surveyor, and since Taylor needed to go on a long journey to complete his researches into the work output of huskies, I had only to find one other man to act as a sledging companion for myself. This was not so easy, as almost all of the others were fully qualified to fill the rôle. I had, however, to be absolutely right in my choice, as the success of the journey might depend on just that one man.

After much careful thought I picked Tait, and am thankful that I did. Not only did we sledge and camp together in perfect harmony, but I owe him my life. I think it was only Tait's ability to remain calm and act with his particular kind of unhurried efficiency that saved me in a very dangerous situation. For a support party to carry the additional food we needed to complete our task, I selected Worswick and Willis.

Our chief objective was of course the re-survey of King Oscar II Coast, from Pedersen Nunatak south to Cape Alexander, with special reference to Evans Inlet, which had never previously been entered, and to other gaps in existing surveys.

We had also to find a route on to the central plateau, up one of the glacial valleys that occur at various points in the for-

bidding bastion of rock and ice-cliffs extending along the entire east coast of Graham Land. A route was known to exist at Pitt Point, opposite Carlson Island in the Crown Prince Gustav Channel, but no other approach had been found between Pitt Point and Trail Inlet, which is a hundred miles south of Cape Alexander. We had been asked to look for a possible way of getting up into central Graham Land, somewhere between Cape Disappointment and Borchgrevink Nunatak. On this the future and survey of that part of the peninsula depended.

In addition, there were a number of minor objectives—the position of several prominent features along our route were to be fixed to serve as links in the future air survey of the Falkland Islands Dependencies; a series of observations had to be carried out along a group of rock peaks known as the Seal Nunataks, and the survey of James Ross Island, north of latitude $63^{\circ} 55'$ South, had to be checked.

We had also been asked to visit the Naze, a spit of land on James Ross Island at the entrance of the Sidney Herbert Sound from the Erebus and Terror Gulf. The year before, Mottershead and Taylor had found a small fragment of fossilized bone at the Naze. It was thought to be part of a reptilian vertebræ and had excited considerable interest among the scientists in Britain. The Scientific Bureau wanted us to fix the exact location where the fossil was found, and to look for more specimens. Finally, we were all very curious to know what was happening at the whale pools near Carlson Island.

We set out on August 6, in dazzling sunshine, with shouts of "Good sledging!" from the men we left behind following us up the stiff climb to Summit Pass. Tait and I led the way with the Players pulling "Bloody Mary." An hour later came Taylor and Leppard with the Number Ones and "Ice-cold Katie." Worswick and Willis followed an hour after them with the Gangsters and "Eskimo Nell."

The air was clean and cold, the snow crisp, the dogs pulling for all they were worth, and it was good to be alive.

I turned to Tait as we went along: "Jock," I said, "it's going to be a long trip—pretty hard going for the next three months."

"Och, it's fine," he replied. "Just think of those poor bastards at home having to go to the office every day."

That thought was Tait's standby. He was to produce it in our worst predicaments, in frightful storms and during our moments of abject depression. There was nothing to be endured in the Antarctic that he would have substituted for the routine of working in an office.

My plan was to travel independently to View Point, where we would spend the night and then load up with 1,200 pounds to each sledge and set out together.

The surface was excellent as we headed down the Crown Prince Gustav Channel next day, and everything went well at first. We sledged without difficulty, going past Eagle, Tail, Egg and Red Islands, where hundreds of fat and healthy crabeaters lay scattered on the ice—a promise of fresh meat for the dogs and ourselves, possibly as far as Cape Obelisk. The worst of the *brash of two months before had been filled in by drift and snow*, and we made good time. Just south of Red Island, however, we ran into a small area of brash, and soon we were struggling with sledges that overturned every few yards and vigorous dog teams that were difficult to control.

The extent of the brash was considerably reduced from that on the depot journey, and by one o'clock Taylor and Leppard with the leading sledge were clear of the worst of it. I was congratulating myself on getting through a part of the journey I had been dreading, when I looked back and saw that the support party had stopped about 200 yards behind us, and were standing there, looking at their sledge.

At first I thought they had overturned and needed a hand, so I started to walk back. As I got nearer I saw that the sledge was upright, but both Worswick and Willis were inspecting their right-hand runner. It had snapped clean across, about midway

along its length, so that the sledge could not be moved—the front part of the broken runner was digging into the snow. There seemed to be no reason for the break as it had occurred when the sledge was actually moving over one of the few flat stretches between ridges of brash.

"This is a bit of a blow, Bill," Worswick said, "but I am sorry, we cannot go on."

Willis looked at me anxiously. He was wondering whether this would mean the end of the journey for him.

"We're lucky it happened now and not later," I said, and turned to Willis. "Would you mind calling up Paul at base and asking him to send a sledge out to View Point? Meanwhile, you two can take this one back to View Point, exchange it for the fresh one, and return as fast as you can. We'll take your load to Lie-up Point and wait for you there." Willis looked relieved.

We tied a ski like a splint under the fractured runner, and were able to get the sledge to move by pulling it backwards. The next day Worswick and Willis set out for View Point, but they did not get far before they had more bad luck. Two of their young dogs, Teddy and Jim, set upon an older dog, Scroop. The fight was stopped, but not before Scroop was so badly mauled that he had to be carried on the sledge. A substitute dog was obtained at View Point, but poor Scroop had later to be shot.

Because of bad weather and poor visibility, it was five days before the rest of us moved on another fourteen miles to Lie-up Point on James Ross Island. Carlson Island was due east of us, with its mysterious whale pools, which we now revisited.

A dramatic change had taken place. All the small pools had disappeared, the ice having closed over them, and the large pool, which in July had extended over six square miles, was reduced to two patches of rippling black water, each about 300 yards by 150 yards.

The scene was even more fantastic now, because the smaller areas of water packed the whales closer together. It was difficult to estimate the number. Possibly there were 250, with about the same proportion as before of Rorquals and Killers, and a few bottle-nosed whales that occasionally pushed their strange glistening snouts out of the water to breathe. The sound of the breathing, like steam engines sighing and hissing, had become more intensified.

On the ice round the pools were hundreds of crabeaters. A number of seals were also in the water, but still the Killers appeared to be ignoring them. I killed one seal to feed the dogs, and threw parts of it dripping with blood into the water among a group of three Killers, to tempt them to eat. They took not the slightest notice. Presently they approached the edge of the ice where we were standing. They were poised, treading water, as it were, with their white bellies and chins exposed, looking like enormous grinning lizards. Two were fully grown, more than twenty feet in length as far as I could judge; the third being a baby of about ten feet.

As the Killers came up to us I noticed that a crabeater was lying half on the ice and half in the water. They got quite close to the seal, and I thought that now at last they would solve the mystery of their behaviour by having a nice normal meal. What I saw instead was a remarkable sight, because the crabeater, which by nature is possibly the gentlest of seals, snapped at the Killers, and those three dreaded carnivore of the sea actually backed away.

Presently they came back, opening their mouths, so that we saw their rows of sharp teeth. The three closed in on the crabeater, and they reached up tentatively towards it; but again the seal put its head down in the water and snapped at them and the Killers retreated. They kept on trying to nip the seal, until finally it became bored, and slipped into the water, brushing rudely past them.

One possible explanation for the remarkable change we had just observed in the manners of Killers is that they now had all

the food they wanted just for the taking. As they were no longer hungry, there was no need for them to be ferocious. They may only have been taking junior for an outing, and amusing him by playing with the crabeater. Seals may have become to them what cattle are to us—and our hunting instincts are not aroused at the sight of a cow.

Perhaps they were the best-fed Killers in the Antarctic; we will never be sure; yet how can one account for the psychological change in the seals? Under normal conditions, as we had already seen, the very presence of Killers is sufficient to drive every terror-stricken seal out of the water.

Suddenly we became very fond of the "Grove Family," as we named the Killers. They seemed quite tame, and we decided that they were trying to tell us that they were starved of affection. To make them feel better, we leaned down from the ice and patted them with our ski-sticks. From the way they kept looking at us and grinning, they may have been appreciating our gesture or just thinking of their supper. They were probably the first live Killers ever to have been patted by human beings.

We had to wait five days at Lie-up Point in glorious weather, while Worswick and Willis were held up by the blizzard at View Point, fifty miles away. We used to come back to the pools, to take photographs and note down details of their behaviour for the Scientific Bureau. I was mainly concerned with the whales until I noticed that the seals on the ice were behaving peculiarly. A number seemed lethargic and sluggish and some of the females had miscarried, leaving foetuses lying about in the snow. I little realized that this must have been the prelude to the holocaust we were to witness on our return.

When Willis and Worswick eventually arrived, on August 19, Tait and I showed them the pools, and we invited them to join the "Whale-patters' Club" by patting two Rorquals as they came near to the edge. Then we headed southwards to rendezvous with Taylor and Leppard who had gone on ahead. The

next day the weather broke with a blizzard, and we lay up for three days, cursing.

Taylor and Leppard were waiting for us just past Cape Obelisk, where they were camped on a low part of the shelf-ice, beside one of the large snow-free boulders we had seen on the previous trip. The position of this was being fixed, so that it could be used later to study the movement of the ice-shelf.

We lunched, then set off all together, south-west towards Persson Island, skirting the pressure ridges of the ice-shelf to the point where we had climbed on to the shelf before. We set course south-east, towards Longing Col, thirty miles away. When we camped that evening at five-thirty we had reduced the distance to eighteen miles, and our mood was one of high optimism. We were together again, we were well on our way, and the weather had improved.

Our luck did not hold. The following afternoon a blizzard forced us to "storm-pitch" our tents, after we had covered only thirteen and a half miles. During the night the temperature fell to 26° F., and while the blizzard was at its height, with the wind at probably seventy knots, I heard a commotion among the dogs, and went outside to find Vesta, my second bitch, being served by Bonzo.

"Huskies all over," Tait observed. "No regard for the time or the place."

"Obviously we can't risk taking Vesta with us all the way," I said. "We'll have to send her back with the support party when they return. They can leave us one of their dogs."

And that was how Nukuak came to join the team, and a lazier dog I have never known.

The blizzard blew itself out during the night, and we continued the journey next morning. Soon we were climbing the gentle slope up to Longing Col, from the top of which we could see the depot another three miles farther on, and beyond that the Larsen Ice-shelf stretching as an expanse of grey whiteness undulating to the south, where it merged into the grey whiteness of the sky. To the east was the Weddell Sea, its horizon

overcast with a long dark line which indicated the presence of open water. To the west were the ramparts of Graham Land, broken occasionally where glaciers emerged, like tongues of primeval ice stuck out at the world. This was the sort of coast we were going to map.

We picked up the depot at Longing Col, and now with approximately 1,400-pound loads we went down the short, steep slope and on to the ice-shelf. We travelled southward, keeping about twelve miles off the coast to avoid the pressure ridges, which made sledging practically impossible too near the coast. We could just see Cape Fairweather 100 miles away, but throughout the day it remained a vaguely remote shape in the distance, and we did not appear to be moving at all. I understood then why this was known as the Never Never Land—you slogged all day but never seemed to get anywhere.

Suddenly it became intensely cold, and that night the temperature dropped to -42° F., so that even the Primus flaring all night made little appreciable difference. I was worried about the huskies and went outside to see how they were faring. They were perfectly comfortable, like little mounds of snow which started wagging bushy tails as I went up to them.

Sledging next day was most unpleasant. It remained very cold, and we moved almost like blind men through a speckled mist of falling snow, with the leading sledge ahead of us like a phantom.

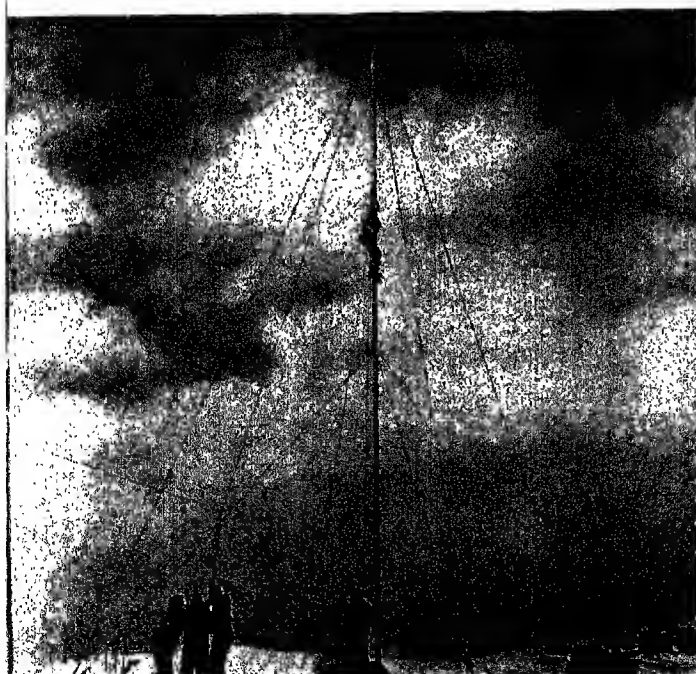
Soon after the lunch halt we ran into pressure ice that lay for miles across our path, with the ridges interspersed with crevasses bridged by thin crusts of snow. These crevasses were impossible to detect. Taylor and Leppard were leading, with Tait and myself following them and Worswick and Willis bringing up the rear. As we were moving slowly through the area I saw the leading sledge dip on one side as the right-hand runner sank into soft snow. I stopped the Players, and signalled to the team behind to close up.

"Slim," I called to Willis, "will you take over our sledge? Jock and I are going to give them a hand."



Antarctic summer. Depot Glacier with Mount Taylor and Blade Ridge on the right

(Below) Repairing the base radio mast damaged in a blizzard. Worswick, Mander and Leppard pulling Tait up in a bos'n's chair





Sledge and break tracks in the Larsen Ice-shelf near Cape Alexander

With four of us and the dogs heaving and pulling, we managed to get the sledge up on to firm ice. Tait and I then returned to our own sledge, and when we reached it Willis started walking back to where Worswick stood towering above his sledge. As I looked towards Worswick he suddenly disappeared.

I ran back to find him hanging from the handle-bars over a gaping hole where part of a snow-bridge had given away.

"Hang on, Lofty," I called to him.

"Huit! Dogs. Huit!" Willis shouted.

The team strained on their traces, as Willis and I pulled on the sledge. Slowly Worswick was dragged out of the hole and knelt on the ice, as the sledge jerked forward. A moment later the snow-bridge collapsed behind him with a crack, leaving a large crater.

Fortunately the sledge had been standing on firm ice, because when we looked down into the crevasse we saw its bluish-green depths falling away into darkness heaven knows how many feet below. The walls were spiked with long sabre-like, crystalline icicles that projected upwards and outwards. Worswick was visibly shaken, and so was I for that matter. Had he fallen he could easily have been skewered by one of those icicles, apart from breaking his neck or getting wedged irretrievably where the crevasse narrowed.

The incident brought home to us all the extent of the danger we faced. I had already formulated a crevasse emergency plan which was to be put into operation the moment the need for it occurred. If a man fell down a crevasse, a tent was to be put up immediately and the Primus started to boil water for tea. Meanwhile, if I was not the unlucky one, I would go down with the others lowering me on a rope. Everything possible would be done to bring up the victim of such an accident, though I would not have given very much for his chances of survival.

With these sober thoughts we continued southwards, and that night again the temperature fell to the minus forties, and I cursed the air mattress I was trying out. Though I had blown it

up hard, it was almost flat in the middle of the night, and I found myself with very little insulation between my sleeping-bag and the groundsheet. It was a relief when morning came.

There was a fine, clear sky when we started out, yet the temperature continued to drop throughout the day, and by three o'clock in the afternoon, after we had covered fifteen miles, Willis was suffering intensely. The cold seemed to have eaten right into him, so that his stomach felt like a lump of ice and his body was tensed. He just could not go on, so I decided to camp. Then a blizzard came up from the south-west, and we lay up another three days, during which period the thermometer registered -54° F., or eighty-six degrees of frost, and the drift piled up round our tents, sledges and dogs.

When I looked out of the tent to carry out a met. observation at three o'clock on the third day, all I could see were the handle-bars of the sledge just sticking out above the snow. The dogs were buried under mounds, but when I opened the pemmican box each mound suddenly exploded to reveal a grinning dog. They were the least worried by these conditions, and on the march had been keeping up a steady 3.2 miles an hour with a work output that, according to Taylor's strain gauge, remained generally constant throughout the day.

Our bad luck in the brash of the Crown Prince Gustav Channel, and the resulting delays, now made it necessary for me to alter my plans. I had been counting on the support party to help us with the loads as far as Cape Disappointment, but Willis was required back at base, as Lewis and Clarke were waiting for him to return before they could leave on an important route-finding and depot-laying journey to the Naze.

"I am sorry we cannot take you two any farther than Pedersen Nunatak," I told Willis.

"That's all right, Bill," he replied. "I think we have had enough of this lark. Makes me appreciate my nice warm radio room."

At 5 p.m. on August 30 we reached Pedersen Nunatak, a 700-foot cone of black rock projecting out of the ice-shelf. We

had a little difficulty in finding the depot, as it had been blown down and drifted over during the last year, but everything was in perfect condition and now we had sufficient food and fuel to support four men and eighteen dogs in the area for seventy days.

We all felt rather lonely as the support party left at first light next day to return the 160 miles to base. Our dogs set up a prolonged and dismal howling, Bonzo being particularly upset at being parted from his beloved Vesta and taking an instant dislike to Nukuak, who was now his partner.

Now at last the real survey work could begin. My plan was that Tait and I should continue down to Cape Disappointment, fifty miles farther south, to lay ten days' supplies, while Leopard and Taylor went to carry out the survey of Evans Inlet. We were all to rendezvous back at Pedersen Nunatak in ten days' time, then continue southwards together.

Before we left we weighed the dogs by hoisting them one by one on to a tripod, and found that their average loss of weight was about one and a half pounds. We were feeding them each with an extra quarter of a pound of pemmican, to keep up their strength, and they were still pulling at 95 per cent. of their maximum recorded capacity.

Tait and I loaded up our sledge and set out, heading west for two miles towards the Seal Nunataks, then due south. Between Pedersen and the first Seal Nunatak we looked back towards Cape Longing. By some trick of refracted light, the whole length of cliffs stretching northwards seemed to be suspended hundreds of feet in the air, and the returning support party seemed to move along like ghostly sledgers. This mirage persisted all day, and as we glanced over our shoulders from time to time the Seal Nunataks appeared to float like islands in the sky. Small ice-ridges would appear enormous, yet at times cliffs 2,000 feet high seemed small and insignificant.

At first we travelled due east to avoid the pressure ice off

Cape Fairweather; then we turned south again, heading for Cape Disappointment, which we could just make out on the horizon. Now that we were on our own, Digger, our leader, began to lose interest, and we found that the only way we could keep him leading was for one of us to go out ahead on skis. By this means it was possible to make 3.5 miles an hour. (Distances were recorded on a cyclometer attached to a bicycle wheel projecting two feet behind the sledge. This was accurate to within .5 per cent.)

At five o'clock that evening we arrived at an isolated area of pressure ice on what was otherwise a practically flat surface. It seemed a suitable place to camp, so we fed the dogs, pitched our tent, had our evening meal and turned in. But that night at about eleven o'clock I was roused by a deep rumbling sound which seemed to come from the very bowels of the ice-shelf. It went on for some time and then stopped. Later it started again. I was about to get up to look outside, when it quietened down; so I forgot all about it, and went to sleep.

Next morning when I went outside I discovered a crack in the ice, about four feet wide, stretching between the tent and the sledge. We were lucky that our tent was not pitched another two yards to the left or we would have suddenly found ourselves hurtling down into the depth of the ice-shelf. The rumblings had probably been caused by the movement of the shelf over a rock below us, resulting in the cracks and pressure ridges in that spot.

We carried on southwards, considerably chastened by the experience, and wondering what other unpleasant surprises the King Oscar II coast had in store for us. I looked at the sastrugi we were now sledging over, with the expanse of the ice-shelf rolling and undulating before us like the South Downs and it seemed never-ending.

We stopped at twelve for Tait, who was the official met. man of the trip, to do an observation, but he could not find his whirling thermometer anywhere.

"Didn't you put it in the sledge bag, Jock?"

"No, I didn't. I thought you did."

"Well, we'll just have to go back until we find the thing, I suppose."

With a feeling of mutual recrimination we turned the sledge and headed back to the camp site. After half an hour, it seemed to me that if we were not to lose a whole day we must unload the sledge and get to the camp site and back as quickly as possible. When I suggested this to Tait, he looked doubtful.

"All right with me, Willie, but I hope to God we don't get caught in a blizzard without a tent."

"So do I, but let's risk it."

We began unloading the sledge, when the thermometer fell out of the tent.

"I never thought I would be so glad to see a met. instrument!" said Tait with relief.

Next day we got to within five miles of Cape Disappointment before we were stopped by extensive rifts in the shelf-ice, some of which were over 100 feet across. We camped for the night and, the following morning, after leaving the depot with a flag at our camp site, we set out to recce the Crane Glacier, which swept down from the plateau to the shelf a few miles away.

At a distance it looked a possible route up to the plateau, but as we went nearer, the surface broke up into steep ridges filled with soft snow and criss-crossed with open crevasses. We were forced to make many detours, and even with a light load the dogs found it hard work in snow which frequently came up to their chests.

Our progress was slow, and we camped eventually at five o'clock with three tough miles still between us and the foot of the glacier. Next morning we tried to reach it, but by one o'clock had come to a point where it was not possible to go on without man-handling the load, sledge and dogs; as we had neither the time nor supplies to continue the recce, we reluctantly began to retrace our tracks.

Eventually we got ourselves out of the approaches to the

Crane Glacier, and we turned northwards, heading back towards our rendezvous at Pedersen Nunatak. We went past Whiteside Point and Evans Inlet. Somewhere near Cape Fairweather, a day's march from Pedersen, the surface became soft and sticky. It was a fine afternoon, with a wind of about two knots from the south-west and the temperature $+20^{\circ}$ F. I record these conditions, as they will help to complete the picture of one of the most horrifying experiences I have ever had in my life.

Tait and I were taking it in turns to go ahead on skis while the other drove the sledge, and at three o'clock I took over the lead. I found as I went along that snow stuck to my skis, caking heavily, so that with only soft bindings designed to go over our large snow-boots, it was difficult to keep them on properly. Every few yards I had to stop to scrape off the snow, but the moment I started out again it would start balling up under me. To save time I took off the skis, put them on the sledge, and continued leading the way, walking some fifty yards ahead of the dogs.

Suddenly, without a warning crack or groan, the surface gave way under me. Instinctively I flung out my arms and just stopped myself from falling through the hole by clawing at the snow in front of me and hanging on, with my legs swinging over what I shudder to think lay below.

I turned my head and could just see Tait bringing up the sledge and getting out the climbing rope. Out of the corner of my eye I saw them pass at the back of me, and the next thing I knew was a searing pain in my head. At first I had no idea what had happened and looked over my shoulder. Not two inches away I saw the bared teeth of a snarling dog.

As it came at me again I put up one hand to save my eyes, and pain shot from my wrist along the length of my arm. I felt my wrist being chewed, and a pair of jaws on my upper arm; almost in the same moment the whole team was upon me, savaging my head, my face and shoulders. I could do nothing to fend them off, as I was barely clinging to the slippery ice for

my life. Blood was running down my face and I got the taste of it in my mouth. Teeth were in the back of my neck, and I hunched up the muscles of my shoulder to resist.

I wondered what Tait was doing letting the dogs attack me and screamed out for him. Then, at last, I heard the whacks as he lashed at them with a rope brake, and the bites and the agony ceased as he drove them off.

He took them on another twenty-five yards, fastened one end of the climbing rope to the sledge, made a bowline at the other end and threw it to me. Strange as it may seem, I remember noting at the time that it was a perfect bowline.

I managed to get the loop of rope over my head and under my arms, but each time I tried to scramble out of the hole the snow-bridge crumbled. Finally a whole section of it around me collapsed and I swung against the crevasse wall. Here I had something to get my feet against, and was able to climb up on to the solid ice.

I lay down on the snow, bleeding. There was a deep hole in my wrist and long gashes on the top and back of my head. I rubbed snow on the wrist wound to try to stem the bleeding, and bound it up with a field-dressing. Tait offered to put stitches in my head, but I thought I would rather not risk his surgery. As with my wrist, snow stopped the bleeding by freezing the blood, and we bandaged up the wounds.

As I stood up, I was suddenly very frightened and very angry and, acting on impulse, thrashed Flook and Bodger, who had been foremost in the attack. I was puzzled, because as a rule a husky does not attack man, but afterwards I realized that all my team could see of me was a head sticking out of a hole in the ice, and that in a husky's experience is usually a seal.

We got to Pedersen Nunatak next day, and waited there for the other two, who arrived five days later, having made the discovery that Evans Inlet was not an inlet but a massive glacier.

At first they had not been able to get past the huge rifts obstructing the entrance to the inlet, which was seven miles wide. They camped just short of the northern point, and in the

evening climbed about a thousand feet up the towering cliff to look for a way in. There appeared to be a narrow passage skirting the cliff, and they decided to try it next day. The passage was no more than a few feet wide, but it took them past the barrier at the entrance, and suddenly they came upon the spectacle that had been hidden from the outside by the pincer shape of the cliffs. The immense glacier extended upwards like a gigantic hand clawing the plateau, with fingers that were glacial tributaries.

This was an important discovery, but what excited Leppard and Taylor at the time was that they may also have found the route to the plateau we were looking for. They spent two days trying to get up, but were stopped by impassable obstacles on every glacial finger. They completed the survey of the inlet, their original objective, collected a number of geological specimens for later study, and came out.

Our next objective was a survey run down the coast to our farthest point south. It was the toughest phase of the whole journey, intensely cold for the most part, with a high wind and drift and dangerous surfaces, but hardest to bear, I think, was the monotony of the ice-shelf as it undulated for mile after mile, and we slogged on, mechanically driving the dogs with only the prospect of five minutes' rest every hour to break the treadmill grind of sledging. The whole of the ice-shelf between Seal Nunataks and Cape Disappointment is known to be deeply crevassed, and we tried not to think of what lay under the surface as we sledged over it.

Leppard was now mapping the coast-line by taking a series of compass bearings and with a theodolite plotting the features and contours to a depth of ten miles. He also took a series of panoramic photographs. On occasional nights he would go outside to do an astro fix, which is a number of star observations to establish our exact position on the map. It was slow work in temperatures at which the touch of metal will "burn"

the flesh; Leppard could not wear his heavy gloves for the finer adjustments of his tangent and levelling screws.

We camped again in the isolated patch of pressure ice not far from where Tait and I had pitched our tent the night the crack had opened up beside us. Once again we heard the rumblings under the ice-shelf, and lay wondering whether another gap would suddenly open and swallow us up.

Next day we reached the area of Cape Disappointment and continued southwards, after making a wide detour round the rifts and pressure ice. All the time we were looking for possible routes up to the plateau, and now the chances appeared more promising. There seemed to be a number of possibilities, the most obvious so far being up Cape Disappointment itself.

South of Disappointment we were stopped by a vast rift in the ice-shelf, about 100 yards across with sheer sides dropping 150 feet. We detoured and continued, and another day passed. We were running out of tobacco, and rationed ourselves to two pipes a day, one after breakfast and one at night.

Next day, September 19, we did twenty-three miles but were still eighteen miles from Borchgrevink Nunatak when we camped. There we stayed all next day, as the visibility was not good enough for Leppard's work. The coast-line was extremely complex from his point of view, the panorama rapidly changing every few miles. Mountains, nunataks and glaciers would come into view, but after a short distance fade out of sight, hidden behind new features.

On September 21 we made a late start, as the tents and sledges took a lot of digging out, and for the first hour we travelled in the face of a bitterly cold wind from the south-west, while drift caked thickly on our goggles. The weather improved after the first hour but the surface rapidly became crevassed, and soon there were large cracks with broken snow-bridges everywhere around us. We had to pick our way by finding a snow-bridge that was intact and hurrying across before it broke. One of these snow-bridges collapsed just as Tait had got our sledge half-way across. I heard a shout and ran back to find him

swinging from the handle-bars, while the sledge teetered, and the dogs were tugging and straining to prevent it from overbalancing and falling backwards into the chasm. By pulling on the sledge with the dogs, I managed to get it and Tait over safely.

By the end of the hour we were clear of the crevasses; yet now we found ourselves in a wide belt of pressure ice, with some ridges well over 100 feet high intersected by rifts and gullies filled with soft snow. Soon we were twisting and turning through a bewildering maze, where the sledges were bogged down every few yards, and we heaved and pushed to help the dogs. Again and again the sledges overturned, and my fear was that if one of them was damaged so far from base, we might find ourselves in a pretty tight spot.

Eventually, after two hours in which we covered about half a mile, we got through to the comparatively smooth and safe shelf-ice again, and continued sledging till about four o'clock, when we stopped for Leppard to work on his survey.

Borchgrevink Nunatak was six miles away, and we approached it next morning, climbing a steep slope known as Philippi Rise, to the base of the nunatak which rose like a black fang out of the snow. This was the farthest south that Nordenskjöld had reached on his journey in 1902.

I had planned to make a depot here of everything we had except the bare essentials for the last leg of the outward journey to Cape Alexander, fifty miles away. I hoped that with lightened sledges we could be back at Borchgrevink in six days, with enough food and fuel in hand to enable us to try and reach the plateau by the Richthofen Valley to the north of the nunatak, and if that proved possible, to turn northward up the plateau and come down on to the shelf-ice again at Cape Disappointment.

After laying the depot, we ran our sledges down from Philippi Rise to rejoin the shelf-ice once more, then headed south for Cape Alexander. We plodded for mile after mile over the seemingly endless desolation with the jagged outline of

Graham Land on our right, and the vague shape of our objective traced lightly on the distant grey sky. To the left the shelf faded away to the delicate horizon line, where ice and sky met without variation of shape or colour. We felt like microscopic creatures moving almost imperceptibly through this immensity, as silent as space except for the eerie howling of the wind and the "swish" of the sledge runners.

Perhaps the dogs suffered more from the monotony because from their height above ground they saw even less of Graham Land and the ice-shelf than we did. Their work output remained high, but they tended to lose interest and go slowly unless something unusual appeared or happened ahead. Then they immediately pressed forward with renewed vigour.

We thought of all sorts of schemes for keeping the dogs from getting bored. The man in front would suddenly start jumping up and down, running from side to side. He might even lie down in his tracks for a while pretending to be a seal. We found that these antics had the optimum effect if he was between 50 and 100 yards ahead. If he was too near, the dogs would soon catch him up and have to be slowed down, and if he was too far ahead they took little notice.

Occasionally we had "bumping" races, with the team behind trying to close the gap between the two, and the one in front doing its best to increase it. Each driver had his own way of encouraging his dogs. Taylor, for instance, might be heard yelling: "Well rowed, first and third! Punch and away! Punch and away! That's the stuff! Well rowed, Vulcan!"

The dogs usually entered into the spirit of the game, but it was exhausting for the drivers, and, if after all these efforts, a dog continued to be lazy, he was hitched directly to the sledge where he had to keep pulling or he got a prod in the behind from the cow-catcher. At times we had three or four dogs in the "cells," as the cow-catcher hitch was called.

We camped at 4.30 that afternoon for Leppard to continue his survey. After taking a round of heights and angles with his theodolite he discovered that Jason Island is not an island but

a peninsula joined to the mainland by Philippi Rise, and at its lowest point is 200 feet above the level of the ice-shelf.

We were away by 7.45 next morning. It was one of the finest days of the journey with brilliant sunshine, the temperature around 10° F., no wind and a firm, smooth surface. Twenty-five miles away lay the tip of Cape Alexander, the point for which we were heading.

At twelve o'clock we crossed the Antarctic Circle, the second party from Hope Bay to achieve this. Indeed, Frank Elliott and the three others who had crossed it on their journey to Marguerite Bay in 1947 were the only other people who had ever seen this part of the coast before.

At four o'clock we arrived at Cape Alexander, a 400-foot cliff rising up sheer from the shelf-ice to a snow-cap lying like a thick layer of sugar-icing on top of a cake, with a tall steeple of rock stuck on top. From the base of this nunatak a long promontory sloped gently to the 3,000-foot cliffs of the mainland.

We decided to leave the shelf-ice and camp at the base of the nunatak, as this would give Leppard a good position for an astro fix that would be easily recognizable from the air. It would also mean that we could collect specimens of rock to take back for geological study. With luck we could have our work completed and be ready to leave at first light in the morning.

For the view alone the climb up to the nunatak was rewarding, because we looked out on the frozen Weddell Sea stretching for miles and miles to the curved rim of the horizon. Immediately below us was a mass of jumbled pressure ice in a belt about twelve miles deep round the cape, and tinted with varying shades of blue and green—lovely to look at from up here, but absolute hell to go through with a sledge. What we also saw and noted was a broad rift stretching out from the cape. It meant that from here the gate to the south lay over the neck of the promontory that separated us from the mighty ramparts guarding the interior plateau.

That evening, before turning in, I stood contentedly smoking my pipe and watching the setting sun transmute the shelf-ice into gold. We had successfully completed the first half of our journey according to plan. We were all fit, and the dogs, as Taylor informed me, were exerting as much effort as they had done before we left View Point.

At the same time I was a little sad. This point, latitude $66^{\circ} 40'$ South, was our farthest south. It was like the middle day of a wonderful holiday, when all the days after will bring you nearer the end.

However, we were not home by a long way. Though we would be heading in that direction from now on, we still faced our toughest and most important task—the discovery of a route up to the plateau.

Chapter Ten

FOR the return journey I decided to demote Digger from the leadership of my team. Though a tough and willing dog he was inclined to lose interest. With more stimulating leadership, the Players would probably knock spots off the Number Ones, so I put Vanda in his place.

Bitches are not often used as leaders, but Vanda was exceptional. She was a career girl, generally disinterested in males. She had come from Greenland, and would have been beautiful but for the fact that she had a pathetic little stump for a tail—the rest had been amputated by some heartless Eskimo when it had got frozen into the ice, the temperature having dropped suddenly after a thaw. She was very self-conscious of her stump, and her embarrassment made her rather waspish, I thought, in her discouragement of any hopeful suitors; but she made a first-class leader. Under her thrusting and vigorous leadership the Players certainly proved themselves the superior team.

Beside Digger in the leading pair came Tommy, a wise, shrewd dog, who always rested during a break. One morning he had one of his ears half torn off in a fight. He did not seem to notice it, although he left a trail of blood in the snow for most of the day.

Next came Pluto, who was nearly six and knew all the ways of avoiding work. Of all my dogs he spent the most time in the punishment "cells." Chopper, his partner, was the glamour boy of the team, and certainly the best-looking dog at base, though I say it myself. Unlike the others, he kept himself immaculately clean. Behind them came Flook and Bodger, the problem children, both nervous and temperamental but good workers. Right at the back were Bonzo, the great lover and sire of several unsanctioned pups, and Nukuak, who was an unctious hypo-

crite, always trying to ingratiate himself with Tait and me. Invariably on his best behaviour if one of us was looking, the moment our backs were turned he would try taking another dog's food or start a fight by biting one of its legs from behind.

They were all individuals, and after months of getting a driver's-eye view, I seem to remember each more clearly by the shape and lift of the tail than by its face or head.

I think, as I write, of seeing little else as we sledged northwards after leaving Cape Alexander, since a grey mist had descended on us. For three days we trudged, mile after mile, hour after hour. Occasionally we would pick up our old tracks and then lose them again. We took it in turns to lead, listening only to the swish, swish of our skis on the snow. It was difficult to keep a straight course with nothing to steer by. Even the pale circle of the sun was obscured, so that the man in front had to keep looking back to check his course with the driver who navigated by compass.

We made remarkably good time, and at about three in the afternoon of the third day we began to climb gently up the southern approach to Borchgrevink Nunatak. An hour and a half later the flag fluttering above our depot by the side of the nunatak suddenly appeared out of the mist twenty-five yards ahead of us. That night we fed each of the dogs with two blocks of pemmican, which they had greatly deserved, having completed 510 miles since leaving base.

At six o'clock next morning the mist was still as thick as it had been all the way from Cape Alexander, but now snow was falling as well. However, by ten the snow had stopped, and when at 2.30 I looked out of our tent it seemed as if a theatre curtain had gone up to reveal a brilliantly lit scene, with a backcloth of forbidding mountains and glacial valleys.

The four of us now set off to climb the nunatak to see if we could spot a possible route up the Richthofen Valley on to the plateau.

The nunatak rose a thousand feet from its base, which itself was another thousand feet higher than the ice-shelf. From the

summit we looked down on a breath-taking view, though our attention was drawn particularly to a broad valley in the coastal range of mountains immediately below us. It was about five miles wide at the point where it spilled on to the ice-shelf, but seemed quite impossible to approach, due to a wide belt of pressure ice. However, just south of the big valley there was a smaller one, which seemed comparatively free of obstacles and ran right up to the plateau. Nordenskjöld, who first saw this smaller valley in 1902, called it Richthofen Valley, but the American maps, compiled after Elsworth's flight in 1935, have since shown the larger one as Richthofen.

It looked as though we might be able to get up on to the plateau by the small valley, and we came down from Borchgrevink Nunatak thrilled by what we had seen. It seemed at last that we were going to achieve our most exciting objective, and with two weeks' rations in hand we would be able to travel at least 140 miles over country never before trodden.

Low cloud hung like a pall over our camp site early next morning, but it had cleared sufficiently by ten to enable us to set out. Morale was high; we felt as if we were starting on an entirely new journey.

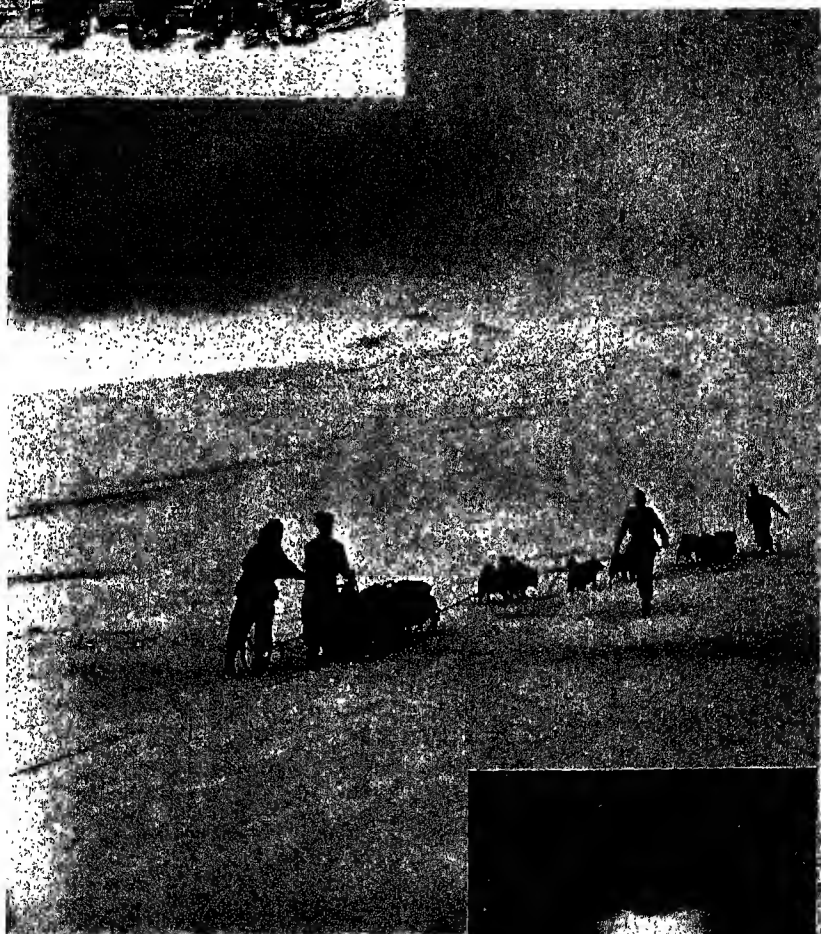
We reached the foot of the valley by twelve, and began ascending the glacier that lay between its sheer, 700-foot walls of granite. The ascent was gradual, and the heavy snow which had fallen in the last two days proved a blessing, because it covered the glair ice and allowed the dogs to get a grip.

After climbing for three miles the glair gave way to heavy sastrugi, which proved as difficult as any brash, but by 4.30 we were nearly at the top of the gorge, having got to a height of 1,500 feet after travelling nine and a half miles from the foot of the glacier. When we looked back we could see well over the top of Borchgrevink Nunatak and beyond it to where the Larsen Ice-shelf melted away in misty tints of orange and yellow on the wide sweep of the horizon. Now the valley had become wider, and a gentle incline of about fifteen miles lay



(Left) The Main Journey party. Left to right, the Author, Tait, Taylor and Leppard

(Below) The Author and Clarke setting out from base for View Point Hut on a training run for a new dog team



Paul Massey, the Deputy Leader





Ellery Anderson writing up his notes on the Main Journey

"Trinity House," Hope Bay, with the sun setting behind Sheppard Point



between us and a false crest. That, we hoped, would be the beginning of the plateau.

We camped for the night and went on at first light, eventually climbing up over the false crest, where at 2,000 feet the glacier widened out of the confines of the gorge, and we found ourselves on the edge of the plateau.

The visibility was not very good. Ahead of us appeared a few isolated mountains, though as far as I could make out no serious obstacles stood between us and the west coast of the peninsula. To the south the land seemed to slope smoothly down to Cape Alexander, but to the north, about twenty miles away, rose a line of peaks that stretched out from the east coast, cutting right across the route I had hoped to take over the plateau to Cape Disappointment.

As we had climbed the last three miles of the glacier that day, we could see a column of mist creeping up the valley and gaining on us all the time. At 12.30 it enveloped us and, with visibility reduced to a few yards, we pitched camp and spent the rest of the day playing gin-rummy.

A blizzard started, and we lay up all next day and the day after.

During these innumerable lie-up periods, the greater part of our time was spent in sleep. Sleep became an economical necessity; we saved our precious candles, fuel and our meagre stock of tobacco. And it saved me thinking the same interminable thoughts, which for the past few weeks had been chasing round and round in my head with soul-destroying monotony.

I now had to decide what was the best course for us to follow, since we could obviously not reach Disappointment by way of the plateau. We probably had enough food and fuel to strike westwards for the coast to make the first crossing of central Graham Land, but I did not feel justified in attempting it. The purpose of our journey was mainly a topographical survey, and however fine it may have been to achieve a first crossing of the central plateau, it was of little value by itself. Our assignment was to find a way up, and we carried that out.

Other parties would follow in the slow, systematic mapping of this vast territory.

The blizzard had blown itself out during the night of September 30, and the first day of October dawned misty and bleak. However, the sky cleared by 9.30, and Leppard was able to start surveying. He was ready by twelve to move off, and we continued westwards for five miles to a rock we named West End Nunatak—at least that was to be the name we would suggest for the Antarctic Place-names Committee to consider in conjunction with the American Board of Geographic Names and other international authorities. Gone are the days when explorers could travel about the Antarctic calling features by any names they liked.

By 3.30 we reached the nunatak, swathed in mist and driving snow, and camped to wait for the visibility to improve. In three hours the cloud had lifted sufficiently to allow us to climb the nunatak, and from the top of it, 1,200 feet above our camp, we got the first glimpse ever of the misty, forbidding interior of central Graham Land. We could see as far west as where the plateau began to slope down to Bellingshausen Sea. The range of mountains to our north was now revealed as a chain of black, jagged, snow-free peaks which probably bisected the peninsula. It was most unlikely that we would be able to penetrate it in the time at our disposal.

Unfortunately, the view was soon obscured by a column of mist that seemed to curl round our eyrie, and we had to come down. Indeed, mist and persistent clouds which hung about the plateau were proving a considerable handicap to survey work, and Leppard had literally to snatch every few minutes of reasonable visibility to take a few theodolite angles and heights before features disappeared behind billowing screens. Because of this we felt that an aerial survey would not be of much value, and that the job would ultimately have to be completed from the ground.

Early next morning Leppard and Taylor returned to the top of the nunatak, and by 7.30 a theodolite station had been set

up. By a stroke of luck visibility was good all round and, when they came down at ten o'clock, Leppard said he had surveyed as far as he could see in every direction.

I considered going on, but decided against it. To find a new area to survey would mean continuing westwards at least another twenty miles, which did not seem justifiable in view of the time lost lying up in bad weather or waiting for cloud and mist to clear. In any case, the survey of the interior to any depth was not included in our terms of reference and we had other commitments.

Reluctantly we turned and went down from the plateau the way we had come. The descent took a mere five and a half hours, and we camped for the night well out on the ice-shelf with a good view of Cape Disappointment forty miles to our north.

In order to avoid the badly crevassed area we had encountered on the way down, I decided to make a wide detour before heading for Cape Disappointment. Still we did not get by without having to cross over some very wide crevasses, and Tait nearly went down one of the biggest and deepest we had yet seen, in circumstances similar to his previous experience.

That evening we were discussing this particular aspect of polar travel.

"Frankly," I said, "I'm scared stiff of the things. I feel as though I'm walking through a mine-field."

"Well, I'm glad somebody else feels the way I do," Taylor said, grinning.

"You'll never see me not hanging on to the sledge," Tait added. Until then I had thought I was the only one who suffered from a too vivid imagination.

By this time the sheer drudgery of sledging was beginning to wear us down. Tait and I had almost ceased to converse, primarily because we had nothing to talk about. Our mental powers had become dulled. Tait, in his third season as a meteorologist, was forgetting the names of clouds which he had been

recording every day, and I could not even remember the names of our dogs. My thoughts seemed to centre on one recurring idea—I would one day compare travelling on the Larsen Ice-shelf with being an ant in an enormous ball, an infinitely tiny ant that crawled on and on and on into grey whiteness merging into white greyness.

To exercise my mind I used to try to go through the names of all the people I know, or work out the best car route from London to Cheltenham. I used to try to enumerate all the different dishes I had tasted, all the places I had been to, all the important events in my life in chronological order, from my earliest memory. I tried thinking in French and sometimes, to keep myself from thinking, I sang at the top of my voice. In the distance I might hear Tait singing, too.

To relieve the boredom of the never-ending chain of rocky cliffs and glaciers along the coast, and the dreary swish, swish of skis over the interminable miles of ice-shelf, I tried concentrating on the ordinary routine things, putting all I had into ski-ing and sledging technique, driving the dogs with the greatest possible attention, cooking pemmican as if it were to be served to the Queen.

Tait, who was never a man of many words, had now become almost totally monosyllabic. He only increased his vocabulary slightly if he touched on one of his three pet topics of conversation—a pub in the north of Scotland, his experiences as a lighthouse keeper, and Wick. But we remained good friends, and shared our last pipe when we finally ran out of tobacco.

Perhaps the other two were not quite so fortunate in their relations with one another. It may have been that they were each a good ten years younger than Tait and myself, and possibly a little intolerant. At times they appeared to be getting on each other's nerves, but it did not affect their loyalty to each other as a team. When Leppard was attacked and bitten by my dogs, it was Taylor who was most sympathetic and concerned.

The attack on Leppard, similar in some respects to what I had experienced, caused me to doubt the intelligence of the

husky even more than I already did. From what happened in both cases it seemed evident that the teams, or at least my team, were only capable of recognizing a man as such when he was standing upright on his feet.

Visibility was very poor that day, and the diffused light made it difficult for the leading man to ski over the sastrugi surface without stumbling. Leppard, who was sledging with Tait for a change, had just taken over the lead ahead of the Players, when he fell in the snow.

The team were close behind, and in a matter of moments they were on him. Their weight and numbers, and the traces, which became tangled over him, prevented his getting up. He would have been mauled badly if Tait had not quickly come to his rescue with a rope brake. As it was, Leppard had severe bites on the back, shoulders and thighs.

The very next day, October 7, was Taylor's turn for an unpleasant experience. We were passing Exasperation Inlet, travelling over a "pie-crust" surface of brittle ice which covered soft, deep snow. It hardened a bit, and we spread out, the sledges a hundred yards apart. It was nearly twelve o'clock.

I was leading the way when I looked round and saw the rear sledge stop. Taylor, who was driving it by himself, seemed to be having some difficulty getting it started. Suddenly he disappeared.

We had become accustomed to this sort of thing, and I waited for him to come up again. He did after a while, as he pulled himself up on the handle-bars and climbed out of the hole; he had gone through in a snow-bridge.

He then went to the front of the sledge to start up the dogs by pulling on the trace and letting it go, but as he grabbed the trace he fell through the snow-bridge again. He was saved only because he was holding on to the trace, and he swung suspended from the front of the sledge, with the dogs pulling and straining to hold him up.

Presently he emerged out of the hole and climbed on to the snow-bridge again. One glance made him aware of the serious-

ness of the situation. With a hole just behind the sledge and another immediately in front, it was obvious that he and the sledge were supported over a crevasse by a perilously thin and damaged snow-bridge, and that another attempt to start would almost certainly cause the whole thing to collapse. If that happened there was nothing to save him from hurtling down into the abyss, with the sledge and dog team. But nobody could go to his aid without adding more weight.

With a thumping heart I watched Taylor, who was perfectly calm and controlled. Very gently he unlashd the load and threw them to Leppard, who with Tait had come back to help him. They then piled it up on the firm ice. In the middle of this operation, while it seemed that the fate of Taylor and the team hung by a thread, the Number Ones chose that critical moment to start a fight. Any second I expected to see the last of them, and I held my breath while Leppard flogged them until they stopped. He and Taylor then continued their precarious task.

At last everything was taken off the sledge, and it was ready to be moved over the gap. The only possible way of doing this was by pulling the sledge across quickly, in the hope that the snow-bridge would survive until the front of the runners was on firm ice. But Taylor had still to get off the snow-bridge.

"I'll drive the sledge over," said Taylor, whose confidence in his own ability was only equalled by his confidence in his dogs.

We watched him go round to the back of the sledge and very gingerly take up his position standing on the runners with the hole just behind him. Then he waited as he looked at his leader, who had turned round and was grinning at him with his tongue out. Taylor had often claimed that he and Spark understood each other.

I prayed that Spark would realize that the utmost was expected of him.

"Now, dogs, Huit! Huit! HUIT!" Taylor's words of command rang out. The sledge shot forward, but the front of the

runners dipped before they reached the edge of the ice-wall, and again the sledge stuck.

"Huit, dogs! Huit!" Taylor urged, and again the team strained on their traces. "Huit, huit!"

Suddenly the runners were up on the ice. The sledge tilted up, and as it rode up to safety the snow-bridge gave way.

After reaching Pedersen Nunatak on October 9, we turned towards our next objective, the Seal Nunataks, a chain of rocks like slag-heaps in a mining area, but the Number Ones, after their magnificent effort at the crevasse, began to give trouble. They became sluggish and would not pull, and finally Paul and Al, the last pair, lay down in the snow and refused to go on. Both teams had been weighed before we left Pedersen, and Paul and Al, like the other dogs, had lost only another pound each. They seemed perfectly healthy, and I began to feel that they were malingering.

We were to have a lot of trouble later with the Number Ones, and I think it may have been partly due to the way they were treated. The two drivers had opposite views on dog-handling, with the result that the team was either being coaxed and encouraged by Taylor or driven hard by Leppard. I feel that those dogs never knew where they stood, and consequently lost enthusiasm.

Tait and I, on the other hand, rarely spoke to the Players if they were going well, and if they were not we drove them hard. Invariably this had the desired effect. Never once did we have to carry a dog, or to stop because any of them was unable or unwilling to continue. All of them tried slacking, and perhaps Chopper got away with it the most because he was cunning enough not to let his trace go slack when he wasn't pulling his weight—he used to walk well to the side, leaning on his harness. An hour of punishment in the "cells" soon bucked up the ideas of any slackers.

As we sledged eastwards past the Seal Nunataks, we were

able to see a magnificent panorama of the coast-line, for the most part covered with a pall of low cloud that spilled over the cliffs in places, like billowing waterfalls. We intended going past Robertson Island till we struck open sea, where we hoped to find seal—towards the end of the last century Larsen had landed just west of Christensen Nunatak and reported seeing seal and penguin.

We were to be disappointed, for as we climbed a 500-foot col of snow that had packed hard between Robertson and Christensen, a flat, featureless expanse of ice stretched away to the west with not a living thing in sight for ten or perhaps twenty miles. There was no sign of open water, though there was the dark line above the horizon which indicated it.

It did not seem worth our while continuing miles off our course on the off-chance of finding a seal, so we turned and headed for Cape Sobral, via Lindenberg Island thirty miles away.

The dogs appeared to sense that they were going homewards. The Players took to jumping about on their traces when we went to harness them up in the mornings—something they had not done for weeks. Even the Number Ones seemed to brighten up!

On October 18 we reached Longing Col to find that the Argentines had left a depot beside ours. The sight of this for some reason filled us with indignation and resentment.

"Why can't they find a place for themselves?" Taylor demanded. "Isn't the Antarctic big enough?"

That afternoon a solitary Dominican gull flew slowly over us; the first living creature, apart from our dogs, that we had seen since leaving Cape Obelisk nearly eight weeks before. The sight of this lonely bird had a marked effect on our morale, and we felt we were re-entering the land of the living.

Snow and poor visibility held up our start until twelve next morning. Half an hour after leaving Longing Col, we

encountered a crabeater, about two years old and full of life, heading south. Both teams surprised us by ignoring it completely.

We did not kill the animal, as it would have meant a considerable delay and we wanted to press on. But what was it doing on the Larsen Ice-shelf, sixty or seventy miles from the nearest open water?

Taylor suggested that it may have been following an atavistic hunch that there was water south of Longing. "Centuries ago," he ventured, "there may have been water where the ice-shelf is now. The ancestors of this seal had possibly lived there and an inherent memory of those times is now impelling it southwards." This theory smacked a bit of science fiction, but we all agreed that it was a very fair attempt. Anyway, it gave us something to talk about.

It turned out to be a fine day, and as we continued northwards the coast of James Ross Island from Cape Obelisk to Cape Foster stood out in clear relief. The surface could not have been better, and we made a good twenty miles before we camped that evening. We were all looking forward to the "perks" box that Massey was going to leave for us at Cape Lagrelius.

That night when Tait and I undressed we decided to have a closer look at our string vests, which we had been wearing continuously for seventy-five days. We were so horrified by the state of these garments that we took them off and threw them away.

"We're not tough—we just smell strong," Tait remarked.

We carried little cachets of English lavender in our sleeping-bags to cover up the smell, but even the lavender made no impression.

We got to Cape Obelisk by 3.30 the following afternoon, and our hearts lifted at the sight of hundreds of Weddell and crabeater seals basking in the sunshine, with gulls and skuas circling overhead. Curiously the dogs took little interest in the seals, and we had no difficulty in driving past them. Then, just as we were leaving Cape Obelisk, we saw the first dead crab-

eater, lying on its side. There was nothing about it to indicate how it had died and we were not particularly anxious.

About 6.30 that evening I was leading the way on skis, when I saw two tents pitched on the ice a little to the west of Hidden Lake Bay. As we approached we realized they were Argentines, and instinctively we straightened up, feeling like riflemen on a march past, proud of the way we were going. Even the dogs sensed the thrill and rose magnificently to the occasion.

We stopped as we came up to the tents and Fossa, a civilian surveyor attached to the Army base, emerged. We hailed each other, and he said that he had a man sick.

"You want medicine?" I asked.

"No problem," he said. "We got medicine. He'll soon be all right."

The party had been to Longing Col and Snow Hill Island, and were now returning to their base.

"Where have you been?" Fossa asked.

"Oh, Cape Alexander, and up on to the central plateau." I tried to sound nonchalant. Fossa registered appropriate amazement which gratified us.

We did not stay long with the Argentines, as we wanted if possible to reach Cape Lagrelius that night. We carried on, but an hour later another of the Number Ones, Visca, collapsed and had to be carried on the sledge. Although he recovered sufficiently after a short while to continue pulling, he collapsed again just two miles short of Cape Lagrelius, and I decided to camp where we were and allow him a good rest and a feed of seal.

As we had come so far without trouble, I was most anxious to maintain this good record, and get back to base with all the men and dogs I had started out with.

That night the dogs had their first seal meat in two months, but although we intentionally kept the feeds down to about two pounds, quite a number of the dogs were sick. It was too rich for them after pemmican.

We were off at ten next morning, in high spirits, looking

forward to the "perks" box we believed would be waiting for us at Cape Lagrelus. In it we hoped to find good things to eat, and above all tobacco and news of base.

As we neared the Cape we spotted the depot flag, perfectly sited, and sledged straight for it. Soon we reached a couple of boxes tied with lampwick. Eagerly we untied them, but our morale dropped the moment we lifted off the lids. They contained only standard sledging rations, which we did not even require.

Our reactions were not printable. Suffice it to say that we consigned Massey to damnation, tied up the boxes and left them where they were.

We were now in the area of the whale pools, but could find no sign of water. Yet, wherever we looked, we saw crabeaters lying dead in the snow, some of them almost covered over by drift. There were more than 2,000 corpses and we wondered at first if they had starved to death when the pools had frozen over, yet they appeared pretty well fed.

Later we did find a whale pool. All that now remained of that unforgettable sight of two months before was a small blow-hole, about ten feet by fifteen feet. In it were four Rorquals, lifting their huge snouts out of the water to breathe. We pitied those doomed creatures, wondering how long it would be before the ice finally closed over them and they too would drown. After taking photographs and making notes, we sledged away from that place of death, with a new mystery baffling us—the mass-dying of 2,000 crabeater seals.

Our next objective was the Naze, and we headed now for Lie-up Point, where we decided to camp for the night. We had pitched our tents, and Leppard had gone to kill a seal, when I heard him shouting and ran to see what had happened.

He had found the "perks" box, containing tobacco, bully-beef, sardines, blackcurrants, a half-bottle of whisky and a tin of liver salts. It had been left by Lewis and Clarke on their way

from the Naze. In it was the letter from Massey, in which he mentioned the Cape Lagrelus depot. I remembered then that I had actually told him to leave the standard sledging rations there in case we should be needing them. We immediately took back all the unpleasant things we had said about him.

There was also a message from Lewis describing in detail a route that he and Clarke had found for us over James Ross Island to the Naze.

James Ross is a craggy, mountainous island, though Lewis's route took us gently up a glacier to a col at 1,100 feet. On the way, at about 700 feet, we crossed a seal's tracks running north to south across the glacier. The tracks were quite fresh, I believe it is one of the highest points above sea-level at which evidence of a seal has been recorded, and we wondered then whether that seal, like the one on the ice-shelf, was seeking open water.

"Maybe it was just trying to get out of the channel—it didn't seem to be a very healthy place for seals," I suggested.

When we reached the col and looked down the northern side of the Island, I saw the stiffest sledging hazard we had so far encountered—a slope with a gradient of one in three ending abruptly in a precipice that fell 500 feet on to the sea ice below. We would have to go down this slope to a point just short of the precipice, from where we would have to traverse across to a twisting, snow-filled gully which led down eventually to Croft Bay, and across the sea ice to the Naze.

I had a sudden feeling that something was going to happen. My premonition was justified because the descent which began prematurely almost ended in disaster.

I had sent Taylor down the slope to do a recce, while the rest of us stopped to put on the rope brakes. Before these could be fitted, however, the Number Ones began to move downhill with their sledge, and the Players immediately started to follow.

Shouting at the teams made no difference—they had experienced a sudden sense of freedom and there was no stopping them. We jumped on the foot brakes, but with the dogs racing

down such a steep incline, the spiked boards digging into the snow proved quite ineffective. Both sledges were gathering speed, and we were heading straight for the precipice. It looked as though we must go hurtling over. Even turning over the sledges would not have stopped them, as they would have continued to roll over and over.

I shouted to Taylor. "We can't hold the dogs! Run across the traverse!"

He realized immediately what I meant, that our only hope was for him to draw the dogs off their course, and he ran across the slope waving his arms.

Meanwhile, Leppard had completely lost control of his sledge—his foot had slipped off the brake and the sledge was now overtaking his team. At that moment we were running parallel, the other sledge about fifteen yards to my right. I saw Tait leave me and go for it, running and sliding across the gap between us, till he caught one handle-bar of the runaway sledge. Next he was being dragged along by it, but managed to swing himself round and, a moment later, he had both feet on the brake. Its spikes dug into the snow, and began to arrest the sledge's increasing momentum.

At the same time both teams swerved in pursuit of Taylor, the sledges swinging round as they were dragged sideways. Only by pulling with all my weight was I able to keep my sledge from turning over. Luckily the Number Ones swerved first, so that Leppard's sledge, in its downward side skid, just missed my team by a couple of yards. Then, as we reached the lesser gradient near the gully, the brakes slowed up the sledges, and we brought the teams to a breathless stop.

"That was the nearest I've ever been to eternity!" Leppard said, as white as a sheet.

We fitted the rope brakes properly for the rest of the descent, and safely reached the Naze that night, having covered twenty-five and a half miles in ten hours.

Next morning we walked out on to the Naze, on the far side of which lay the open sea, crowded with drifting bergs. The

Naze itself was muddy and shaly and, for some strange reason, free of snow. Wherever we looked we saw small ammonites, which are fossil shells. Taylor pointed out the exact spot where he and Mottershead had found the vertebra, and we put Lewis's depot here, with a flag, while Leppard fixed its exact position. We all began searching for more fossils, and soon Taylor let out a wild shout. He had discovered something even more interesting than the vertebra. It was a curiously shaped piece of fossilized bone, like a circular disc, about the size of a saucer. This we all agreed was a major geological discovery, though the Lord only knows what it was.

After Leppard had completed surveying at the Naze, we *packed and headed north-west up the Sidney Herbert Sound*. Presently a blizzard started which blinded us with ice-drift like sharp hailstones, and Tait's goggles were smashed. Even the dogs found it impossible to go on. We tried turning the sledges and sheltering behind them, hoping the wind would die down, but eventually were forced to camp.

The wind stopped during the night, and we were up at 4.30 a.m. intending if possible to make View Point Hut, thirty-two miles away, by nightfall. Three hours later we were nearing Cape Lachman under the majestic domination of its crags, when the colour of the sea ice ahead of us changed dramatically from white to black, and we found to our apprehension and disappointment that we were facing open water stretching right across our path from James Ross Island to Cape Scott Keltie on Vega Island.

Massey, as I learned later, had been trying to contact us for two weeks about the break-up, but our radio set had long since ceased to function.

"Where do we go from here?" Taylor demanded bitterly.

The state of the sea ice had dominated my plans for this journey from the start, though I had thought all along that we would be quite safe if we returned to View Point before the

beginning of November. My worry had been Duse Bay and, as a safeguard against our being cut off by the sea ice breaking up in it before we could return, I had found the alternative route back to base through the mountains behind Hope Bay. If the worst happened and that could not be managed, I had laid up plenty of food and fuel at View Point, where we could wait, if necessary, until relieved by the *John Biscoe*.

I had not visualised a break-up anywhere else before the end of October. As it happened, these conditions were exceptional. It was just bad luck, and we were in a pretty tight spot.

I had not visualized a break-up anywhere else before had occurred, or what other parts of the Crown Prince Gustav Channel were then affected. If it was widespread, we were going to be cut off and without radio contact no one would know where we were or what had happened to us.

There was no time to waste. The only thing to do was go back over James Ross Island, and try to make our way across the channel to Pitt Point, opposite Carlson Island, where we could get up on to the plateau. From there we would try to make our way back to base by travelling overland. If we could not get to Pitt Point, we would have no alternative but to return to the Naze and wait in the hope of being picked up by ship which, of course, I was determined to avoid at all costs. Survey journeys went according to plan in the best F.I.D.S. tradition, and I naturally wanted this one to go down on record as another operation successfully carried out.

Instead of returning all the way round by Croft Bay, near the Naze, and then up over the precipitous slopes of James Ross, we might strike towards Cape Lachman and try to get over a col between the cape and the crags. We moved across to where the water reached up to Lachman, and Taylor and I climbed up on to the col to do a recce.

From the top we could see that there was no water immediately on the other side, but that the break-up continued as far as Red Island and northwards of that. This was a relief, as it

meant that we could get to the mainland by keeping to the south and east of Red Island.

Taylor and I then returned to the others, and together we began the climb. First, it involved a traverse for half a mile across a steep, narrow snow-slope, with a drop into the water on our right if anything went wrong. Then we had to man-haul the loads, sledge the dogs over 100 yards of rock to a snow gully, at the top of which we had to climb another 100 feet of rock and scree to the col.

Here we picketed down both teams, with threats of dire vengeance if they so much as uttered a cross growl at each other. We then lowered everything down a 200-foot cliff to the sea ice below.

All this had taken us about five hours, and the weather had started to deteriorate. I knew a blizzard would soon be lashing at us, but did not want to camp so close to open water, because if high winds caused the ice to break up further we might find ourselves being swept out to sea on one of the resulting floes.

So we sledged out across the Crown Prince Gustav Channel in driving snow and drift, passing hundreds of dead crabeaters. We were all desperately tired, hungry and cold, and Visca had collapsed again; but I was quite determined to put as much ice as possible between us and open water before we camped. Finally, when we had got half-way between Red Island and the mainland I gave the order to camp. It was 7.30.

We were off again at 9.30 next morning in the face of wind and drift and travelling through deep snow. A shroud of low cloud hung over us, obscuring the perpendicular escarpment of the mainland on our left as we sledged past the central islands. At 1.30 we passed Fossa's party camped under Bald Head—they were just packing up to move off, and as we went by we shouted to them to hurry, that it was a race against the break-up.

The weather cleared as we went past Egg, Tail and Eagle Islands, and I had great hopes of reaching View Point hut by nightfall. At 3.30 we had almost reached View Point, singing at the tops of our voices and going all out, when our hopes were

dashed by the sight of more open water again, stretching right across our path from the head at View Point to Beak Island.

We camped under the towering cliffs of the peninsula, bitterly dejected at being cheated of our final goal. Pitt Point lay fifty miles behind us, and now it seemed that we would have to traipse all the way there and back, unless we could find a nearer route up to the plateau. There seemed to be one or two possible places where we could get up, but they all appeared too steep for a dog team and sledge.

That night at eight o'clock Taylor stuck his bearded face through the sleeve of my tent and said: "The Argentines have arrived. They have radioed their base, yelling for a helicopter or a boat to pick them up."

Suddenly I felt almost delighted with our predicament—it was a chance to show our "guests" what we could do. I went out and met Fossa.

"This bloody break-up is a little inconvenient, isn't it?" I said. "We cannot walk round to our refuge hut at View Point."

"We will wait here together," he said. "Argentine Navy helicopter coming to save us."

"No, thanks," I replied. "We know another way back. If you like, we save you instead—how about it?"

Fossa wanted to know where our route was, and I told him vaguely that first we would have to go up to the plateau to View Point. "Then," I added, "since Duse Bay must have broken up, I will take you by a route we know over Blade Ridge."

"You know this way?"

"Sure," I said. "We'll take you."

"No politics?" he asked.

"Only friendship," I assured him.

"Okay, we'll come with you."

Later Taylor said: "What's all this about rescuing them? It's going to be a job getting ourselves out of here!"

"Julian," I said firmly, "we're all getting up at four o'clock

tomorrow morning, and we're going to find a route up these cliffs to View Point if it kills us."

We turned in early that night, setting our alarm-clocks to wake us at four, and next morning set out secretly on foot to find the route we weren't even sure existed.

Taylor and I went up a steep snow-ramp, which after 200 feet led to a more difficult climb, and we found it necessary to cut steps in the ice until eventually we reached the top. From here we were able to see a smooth slope down Broad Valley to the hut. We came down again and met Tait and Leppard who had found a snow gully farther south.

"It's a hell of a climb, but I think we'll be able to get a team and sledge up," Leppard said.

We had breakfast and, while Tait and Leppard went on with the leading sledge to pioneer a passage, Taylor and I waited for the Argentines to emerge from their tents.

They were ready by ten, and we set out for the gully. It was, as Leppard had predicted, a hell of a climb. We had to make frequent halts to recover our breath before we got to the top, yet from there it was a delightful run down Broad Valley in wonderful weather. Tait had a hot meal waiting for us when we reached the hut, and that night we entertained the Argentines.

Fortunately, there was sufficient ice in Duse Bay to enable us to get over, and we set out next day, October 27, to complete the last lap of the journey. Strangely, while practically every crabeater lay dead in the Crown Prince Gustav Channel, here, less and five miles away, there were about 3,000 sunning themselves on the ice, and all very much alive.

By five o'clock we were over Summit Pass and going down the final slope to the base. Suddenly we saw figures running out of their hut and waving, and I felt a wonderful thrill to be home again. We had covered nearly nine hundred miles in eighty-three days, and we had each lost about two stone in weight.

We were all rather pleased with ourselves, and I signalled

Port Stanley: "Party returned from main journey STOP Programme completed. STOP."

Next day, Johnny Green, the Assistant Secfids, spoke to me by radio. He was delighted with our effort, and particularly intrigued about the mass dying of the seals. "I'll report that to the Scientific Bureau immediately."

Two days later came a long cable from Port Stanley relaying a request from the Scientific Bureau for post-mortems to be carried out on some of the dead crabeaters, and for various organs to be taken from the corpses and sent for pathological examination in London.

"You and I are going back," I told Taylor.

"Where?"

"Down the Crown Prince Gustav Channel."

Chapter Eleven

As the sea ice was now breaking up rapidly, Taylor and I did not have a day to lose. We went out and packed a sledge, harnessed up the Number Ones and sledged to View Point. Next day we went up Broad Valley, down on to the sea ice the way we had brought the Argentines, and south to Red Island, where we pitched our tent close to a concentration of several hundred corpses. Most of them were now buried under drifts of snow.

In the three days we spent at Red Island we opened up five and examined twenty-six externally, but learned very little from our investigations. Nothing seemed drastically wrong apart from a highly unpleasant smell. The stomachs were empty, the intestines nearly empty. The kidneys appeared enlarged, and in two cases there were external white specks on the liver. The corpses were of all ages, the youngest being pups barely a few days' old. There was no sign of violence or convulsion. It was as if they had just stopped living in the usual attitudes seals are normally to be found lying on the ice.

Most of the post-mortems were carried out in conditions approaching those of a blizzard—we only lay up when the wind reached gale force. We felt we could not afford to waste any time in that state of the ice. Finally, when we had bottled all our specimens in preserving fluid, we returned to base by the route we had come.

Morale was high at base. The whole of the interior of the hut had been repainted while we were on the main journey, and everybody was looking forward to the relief. The penguins had returned to Hope Bay, though of the 200 we had ringed only three came back to the colony marked with red paint. We never saw any of the others, though we later went all over the rookery collecting eggs.

The first ship to visit us was the Argentine ice-breaker. We

were invited on board for a film show, and went hoping for at least an American musical, but what we saw was *The Conquest of the Matterhorn*!

Soon after the *General San Martin*, came the *Bahia Aguirre*, with a film unit on location to shoot scenes for an Argentine propaganda film on the Antarctic. One morning I looked out of the window of our hut, and saw them dragging across the slope a curious contraption, like an aircraft engine with a propeller mounted on a sledge.

Later Lewis, who went to investigate, told me that it was to be used to create an artificial blizzard.

"They've got two tons of soap-flakes, and they are going to throw these into the slip-stream as the propeller goes round," he explained.

"I don't believe it," I said, but he was right. Later we watched the hero of the film trudge intrepidly across the snow in the face of swirling soap-flakes.

"God in heaven!" Lewis observed. "I never thought anybody would want to bring an *artificial* blizzard to the Antarctic!"

Soon the whole of the Argentine base was relieved. We were sorry to see them go, as we had become good friends. We had by then made up our minds about whether or not we intended staying on another year. I would have liked to, but had other commitments in England.

Worswick had decided to stay for his fifth year in the Antarctic and was to relieve me as base leader, and Clarke had also elected to remain. Mander had asked to be sent to a smaller base, and was to be transferred to Signy. Leppard was going to Coronation Island, to join a party that would be carrying out a summer survey. The others, like myself, were leaving F.I.D.S. Massey was returning to get married and start practising in Birmingham. Lewis was also getting married, and so was Tait. Willis was looking forward to returning home to his wife and family. Taylor was going climbing in the Andes, after which he planned to spend a year in Cambridge writing up the

results of his researches. Kenney was going to the Directorate of Colonial Surveys, and Precious back home for a rest—though a year later he was to come back again to Hope Bay.

When the *John Biscoe* left Port Stanley, the "silly" season began, with varying reports of her movements. Every successive message would alter her expected date of arrival, until finally Willis brought me a signal which said the ship was coming in the following morning.

I had become so set in my Antarctic way of life that I almost resented the ship's intrusion. I could see the crew and the relief personnel coming up to the hut, sitting on our chairs and disrupting our little closed circuit, and I felt distinctly old maidish.

None of us went to bed that night—we spent it scouring out the hut from top to bottom for the usual annual inspection. When morning came, the place was spotless.

The chief engineer of the *John Biscoe* was the first man ashore. He brought us our mail and left us in peace to read it. At about ten, Lewis came to my office and said that the captain of the ship wanted to have a word with me. It was Brown, who had been the first officer the year before—Captain Johnston having returned to England to take over command of a new relief ship that was nearing completion.

As the Governor had not been able to make his annual tour that year, I asked Captain Brown if he would like to inspect the base. He was slightly embarrassed as he went round, scarcely looking at anything and assuring me continually that the place was perfect! I thought he was a considerably changed man from the one I had known on the way down from Southampton.

The *John Biscoe* left no stores on that call. We were told she was going out as soon as possible, and there followed the usual panic of last-minute packing by Leppard, Lewis, Mander, Massey, Tait, Taylor and Willis, who were to leave that morning.

In their places came Dr. George Simpson, Pat Thompson and John Heap, who were Englishmen; Paddy Larmour, an Irish-

man; Dick Walcott, a New Zealander; and Gene Donnelly, a South African.

I was relieved when the *John Biscoe* made her second call in March, 1956. Reluctantly I said good-bye, because I had been very happy at Hope Bay. First the ship went to View Point, where the sections of a brand-new prefabricated five-man hut were landed; this was to replace the Seal-catchers' Arms as a temporary met. station. Then we sailed for Anvers Island, where I landed, to be picked up by helicopter and taken aboard the frigate, H.M.S. *Protector*, "guard-ship" of the Antarctic seas. She had recently gone to the aid of the *Theron*, when she became ice-bound in the Weddell Sea, on her way south with the Commonwealth Trans-Antarctic Expedition.

The *Protector* took me to Port Stanley, where I arrived to find that Tait had married Sally Bernstein. When I went to see them, he already looked domesticated.

"Jock," I said, "I was thinking of going back and possibly having a crack at exploring the Central Plateau. How about it?"

Sally put her foot down. "One thing is definite," she said. "Jock's not going back to the Antarctic."

Jock did not like the sound of that, but had to decline my invitation. "I've got a job here," he murmured.

"What are you doing, Jock?" I asked.

"He's working in the F.I.C. office," Sally said.

"The prospects are good," Jock added, but he looked uncomfortable, I thought.

I went by passenger ship to Monte Video, and from there I was flown to London. After the silence I had become used to, I could hardly bear the noise of the city. I went to my club. A few members were in the bar, talking, and to me it sounded as if they were all shouting.

I collected a batch of mail, among which was a statement of my bank account and some bills outstanding. The sight of them brought me back to civilization with a jolt, and immediately I regretted that I had ever come away from the insulated peace and security of Hope Bay!

I called at the Scientific Bureau. Pathological tests had been carried out on the organs that Taylor and I had taken from the crabeaters, but absolutely no cause of death had been found. The animals had not died of starvation—that possibility was completely ruled out because the adults were all well covered with about one and a half inches of blubber. All that the scientists could hint was that some unknown virus had struck in the Crown Prince Gustav Channel and wiped out the entire crabeater population.

Nor were the scientists able to account for the strange happenings at the whale pools off Carlson Island. Like the mysterious mission of the seal we saw on the Larsen Ice-shelf, and that of another 700 feet up on James Ross Island, it all *remains a secret of the Antarctic.*

Personally, I had come to the end of a phase I shall never forget. I had initially gone down to the Antarctic to think over certain things for myself. I wanted to get reorientated after Korea, but now I found that I hadn't had a moment to think in during the last eighteen months.

I was back where I started.

APPENDIX A

SUMMARY OF ACTIVITIES AT HOPE BAY DURING 1955-6

Sledging

During the year the twelve men at the base covered a total of 8,200 miles 1,060 man-days were spent sledging.

The longest journey lasted 83 days and covered over 900 miles. There were three other journeys of over 200 miles, and four of the twelve men each sledged more than 1,200 miles. The chief journeys were :

<i>Date</i>	<i>Personnel</i>	<i>Distance</i>	<i>Objective</i>
Jan. 7-11	Anderson and Tait	61 miles	Overland route established View Point Hut to base
May 3-10	Anderson, Massey and Clarke	90 miles	Store-hauling Beak Island to View Point Hut
May 14-22	Taylor and Willis	112 miles	Studying the co-efficient of sliding friction of runners on various types of snow surface
June 7- July 15	Anderson, Massey, Leppard and Precious	260 miles	Depot and survey journey to Cape Longing
Aug. 6- Oct. 27	Anderson, Tait, Taylor and Leppard	902 miles	Main survey journey
Aug. 6- Sept. 8	Willis and Worswick	300 miles	Main journey support party
Sept. 6-21	Lewis and Clarke	300 miles	First crossing of James Ross Island
Sept. 25- Oct. 11	Massey and Mander	120 miles	Depot journey Crown Prince Gustav Channel
Nov. 9-16	Anderson and Taylor	80 miles	Journey to Crown Prince Gus- tav Channel to collect speci- mens of dead seal

Medical Research

A detailed programme of cold acclimatization tests was carried out by Dr. Paul Massey. Records were kept of finger-nail growth, and the rate of recovery from the finger-numbing tests which were carried out at regular intervals.

Dogs

There was an average of 75 sledge-dogs at Hope Bay. The Dog Physiologist, R. J. F. Taylor, tested various kinds of dog pemmican and measured the work output of the dogs by means of strain-gauge apparatus attached to the sledge. From these two lines of enquiry, nutrition and work-output, a reasonable picture of the total energy balance of the sledge-dog was obtained.

Taylor's findings showed that the mental attitude and morale of the dogs played a larger part in determining the variations in their performance than their physical condition.

Surveying

On the main journey southwards to Cape Alexander, approximately 4,000 square miles of country were re-surveyed by N. A. G. Leppard at a scale of 1 : 200,000. The local survey of the Hope Bay area, covering 80 square miles at a scale of about 6 inches to 1 mile, was completed after two years' work by R. R. Kenney, mainly on skis.

Meteorology

Over 5,000 met. observations were recorded at base and on sledging journeys. The course of 250 pilot balloons was also followed.

Penguins

500 penguins were ringed, including 100 couples in one colony, to check the theory that the birds returned to their nesting sites each year and took the same mate. A series of sound recordings were made in the rookery throughout the season for the B.B.C. Natural History Record Library.

APPENDIX B

SLEDGING RATIONS FOR TWO MEN
FOR TEN DAYS

1 3-lb. packet of compressed oats
4 15-oz. packets of cube sugar
7 1-lb. blocks of pemmican
1 6-lb. tin of butter
24 packets of biscuits
3 8-oz. packets of pea flour
2 4-oz. packets of dried onions
60 2-oz. packets of milk chocolate
60 2-oz. packets of plain chocolate
1 4-oz. packet of tea
2 ½-oz. packets of salt
2 1-lb. tins of milk powder
1 1-lb. tin of bacon
1 8-oz. tin of potato powder
1 12-oz. tin of cocoa
2 oz. Marmite

APPENDIX C

FALKLAND ISLANDS DEPENDENCIES SURVEY ESTABLISHMENTS UP TO 1956

Notes

BASE A: Port Lockroy, Wiencke Is., Palmer Archipelago. (Latitude: $64^{\circ} 50' S.$, Longitude: $63^{\circ} 31' W.$)	A. M. CARROLL , General Assistant and Base Leader. R. J. WHITTOCK , General Assistant B. TAYLOR , Wireless Operator J. E. SMITH , Diesel Mechanic	Established February 11, 1944. Occupied spasmodically, but continuous occupation since December 15, 1951
BASE B: Deception Island, South Shetlands. (Latitude: $62^{\circ} 59' S.$, Longitude: $60^{\circ} 34' W.$)	C. H. PALMER , Wireless Operator and Base Leader R. E. COOPER , Diesel Mechanic W. McDOWELL , Meteorological Assistant R. P. K. CLARK , Meteorological Observer P. PHIPPS , Meteorological Observer B. GILPIN , Meteorological Assistant	Established on February 6, 1944
BASE C: Laurie Island, South Orkneys. (Latitude: $60^{\circ} 42' S.$, Longitude: $44^{\circ} 34' W.$)	Unoccupied	Established January 22, 1946. Evacuated March 17, 1947
BASE D: Hope Bay, Trinity Peninsula. (Latitude: $63^{\circ} 24' S.$, Longitude: $56^{\circ} 59' W.$)	W. E. ANDERSON , Meteorological Observer and Base Leader P. M. O. MASSEY , Medical Officer R. F. J. TAYLOR , Dog Physiologist R. R. KENNEY , Assistant Surveyor N. A. G. LEPPARD , Assistant Surveyor	Established February 12, 1945. Evacuated February 4, 1949. Station re-established by 11 men on February 4, 1952. Number increased to 12 men in winter of 1954 and maintained up to present time

Notes

BASE D—continued

A. F. LEWIS, Meteorological Assistant
 P. W. MANDER, Meteorological Assistant
 A. PRECIOUS, Meteorological Assistant
 D. R. WILLIS, Wireless Operator
 D. A. CLARKE, Diesel Mechanic
 R. F. WORSWICK, Meteorological Assistant
 M. F. TAIT, Meteorological Assistant

BASE E: Stonington Island, Marguerite Bay, West Graham Land. (Latitude: $68^{\circ} 11' S.$, Longitude: $67^{\circ} 00' W.$)

Unoccupied

Established February 24, 1946. Evacuated February 12, 1950

BASE F: Galindez Islands, Argentine Islands, off Graham Coast, West Graham Land. (Latitude: $65^{\circ} 15' S.$, Longitude: $64^{\circ} 16' W.$)

R. V. HESKETH, Scientific Officer and Base Leader
 R. A. BERRY, Meteorological Assistant
 J. H. WINSTONE, Senior Meteorological Assistant
 L. CATHERALL, Meteorological Observer
 F. D. BYRNE, Meteorological Assistant
 A. B. N. WIDGERY, Meteorological Observer
 C. G. CUMMING, General Assistant
 H. J. BUCKMAN, Wireless Operator
 R. N. OGLEY, Diesel Mechanic

Established February 14, 1935. Hut built on Winter Island by British Graham Land Expedition and occupied until February 17, 1936. Re-occupied by four F.I.D.S. men on January 9, 1947. New hut built by F.I.D.S. in 1953-4 and occupied by ten men in winter of 1954. Reduced to nine men in winter of 1955

BASE G: Admiralty Bay, South Shetlands. (Latitude: $62^{\circ} 05' S.$, Longitude: $58^{\circ} 25' W.$)

J. R. NOBLE, Meteorological Observer and Base Leader

Established January 25, 1947

BASE G—*continued*

G. C. RUMSEY, Meteorological Assistant
 G. B. DAVIS, Wireless Operator
 J. B. PEARCE, Diesel Mechanic
 N. A. HEDDERLEY, Meteorological Observer

BASE H: Signy Island, South Orkneys. (Latitude: $60^{\circ} 43' S.$, Longitude: $45^{\circ} 36' W.$)

H. DOLLMAN, General Assistant and Base Leader Established March 14, 1947
 P. A. CORDALL, Meteorological Observer
 L. J. SHIRTCLIFFE, Meteorological Assistant
 W. L. N. TICKELL, Meteorological Observer
 R. G. NAPIER, General Assistant
 C. L. TYSON, Wireless Operator
 G. J. BULL, Diesel Mechanic

BASE N: Anvers Island, Palmer Archipelago. (Latitude: $64^{\circ} 45' S.$, Longitude: $64^{\circ} 05' W.$)

P. R. HOOPER, Geologist and Base Leader Established February 28, 1955
 A. L. SHEWRY, General Assistant
 D. B. LITCHFIELD, General Assistant
 J. CANTY, Wireless Operator
 A. J. RENNIE, Assistant Surveyor
 W. J. HINDSON, Assistant Surveyor

BASE Y: Horseshoe Island, Marguerite Bay, West Graham Land. (Latitude: $67^{\circ} 49' S.$, Longitude: $67^{\circ} 17' W.$)

K. M. GAUL, General Assistant and Base Leader Established March 11, 1955
 J. A. EXLEY, Geologist
 B. KEMP, Meteorological Assistant

Notes

BASE Y—*continued*G. A. FARQUHAR, Wire-
less OperatorD. ATKINSON, Diesel
MechanicR. D. TAYLOR, Meteor-
ological AssistantD. J. H. SEARLE, Sur-
veyorG. T. VINE-LOTT, Me-
teorological AssistantBarry Island, Debenham
Islands, Marguerite
Bay, West Graham
Land. (Latitude: 68°
 $08'$ S., Longitude: 67°
 $07'$ W.)

Unoccupied

Established by British
Graham Land Expedi-
tion and occupied
until March 12, 1937.
Repaired by F.I.D.S. in
1946 but not re-occu-
pied. Destroyed by
Argentines, probably
in March 1951Sandefjord Bay, Corona-
tion Island, South
Orkneys. (Latitude:
 $60^{\circ} 37'$ S., Longitude:
 $46^{\circ} 01'$ W.)

Unoccupied

Large hut erected Feb-
ruary 1945 but not
occupiedView Point, Duse Bay,
Trinity Peninsula.
(Latitude: $63^{\circ} 32'$ S.,
Longitude: $57^{\circ} 24'$
W.)Intermittent occupation
by personnel from
Base DHut first built in Feb-
ruary 1953. Hut en-
larged during 1955.
New hut erected in
1956

APPENDIX D

ARGENTINE ESTABLISHMENTS WITHIN THE FALKLAND ISLANDS DEPENDENCIES AREA UP TO 1956

Notes

- | | |
|---|--|
| "Melchior," Gamma Island, Melchior Islands, Palmer Archipelago. (Latitude: 64° 20' S., Longitude: 62° 59' W.) | Established January 1947. Manned by Naval personnel |
| "Orcadas," Scotia Bay, Laurie Island, South Orkney Islands. (Latitude: 60° 45' S., Longitude: 44° 43' W.) | Established in February 1904, when Dr. Bruce of the Scottish National Antarctic Expedition invited four Argentine scientists to operate it. Since 1951 it has been manned by Naval personnel |
| "Primero de Mayo," Port Foster, Deception Island, South Shetland Islands. (Longitude: 62° 59' S., Longitude: 60° 42' W.) | Established November 1947 and manned by Naval personnel |
| "Almirante Brown," Paradise Harbour, Danco Coast, West Graham Land. (Latitude: 64° 53' S., Longitude: 62° 52' W.) | Established 1949-50. Manned by Naval personnel |
| "General San Martin," Barry Island, Debenham Islands, Marguerite Bay, West Graham Land. (Latitude: 68° 08' S., Longitude: 67° 07' W.) | Established March 1951. Manned by Army personnel |
| "Esperanza," Hope Bay, Trinity Peninsula. (Latitude: 63° 24' S., Longitude: 56° 59' W.) | Established December 1951. Manned by separate Naval and Army detachments |
| "General Belgrano," Filchner Ice Shelf. (Latitude: 77° 59' S., Longitude: 38° 44' W.) | Established January 1955 |
| "Lasala," Whalers Bay, Deception Island, South Shetland Islands. (Latitude: 62° 59' S., Longitude: 60° 34' W.) | Established by four men in January 1953; removed by British on February 15, 1953 |
| View Point, "Cristo Redento," Trinity Peninsula. (Latitude: 63° 32' S., Longitude: 57° 24' W.) | Unoccupied refuge hut established June 1955, 1,500 yards east of existing F.I.D.S. hut |